ELECTRICAL SOUTH

Serving the 18 Southern and Southwestern States

Contractor's all-electric show home proves public ready to buy—pg. 18

MARCH, 1955

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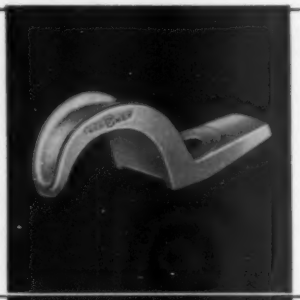
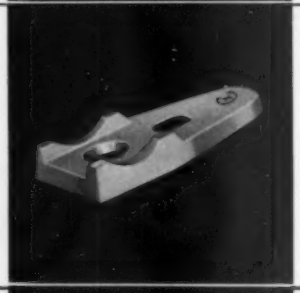


GEDNEY ONE-HOLE STRAPS for rigid conduit, S.E. cables, and E.M.T. Sizes ½" to 6". Hot dip galvanized.

GEDNEY ONE-HOLE STRAPS for oval cables. Hot dip galvanized.



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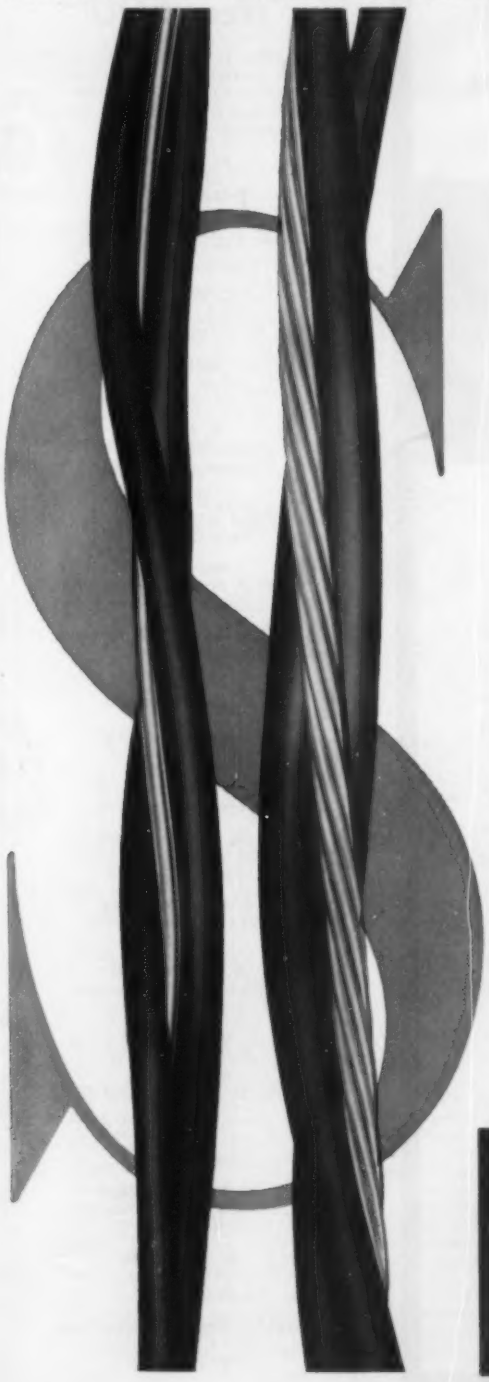
ELECTRICAL SOUTH is published monthly at 214 West Morehead Street, Charlotte, North Carolina by W. R. C. Smith Publishing Company. Executive and Editorial Offices: 806 Peachtree Street, N. E., Atlanta 5, Georgia. Second-class mail privileges authorized at Charlotte, N. C. Subscription Rates: United States and Possessions, $1.00 per year; Canada and Foreign Countries, $10.00 per year.

Volume 35 **Number 3**

Specify Southwire



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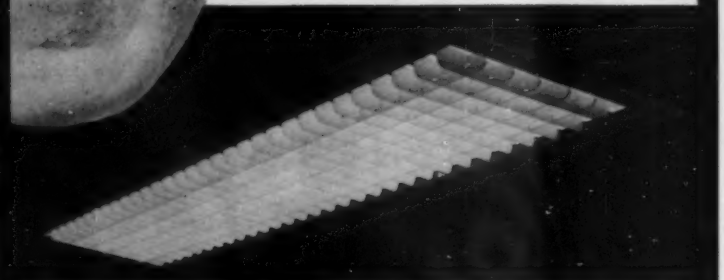

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ELECTRICAL SOUTH

SERVING THE 18 SOUTHERN AND SOUTHWESTERN STATES

March, 1955 — Vol. 35—No. 3

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VIRGIL S. PRICE, *Associate Editor*

FRANCES B. KELLY, *Assistant Editor*

BARON CREAGER, *Southwestern Editor*
(1305 National City Bldg., Dallas, Tex.)

T. W. McALLISTER, *Vice-Pres., Editorial Director*

FRANK P. BELL, *Business Manager*

J. J. FELTON, JR., *Advertising Manager*

J. A. MOODY, *Production Manager*

Editorial and Business Offices

Tel. Atwood 4462

806 Peachtree Street, N. E.,

Atlanta 5, Georgia

ANNUAL SUBSCRIPTION—$1.00
FOREIGN—$10.00

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TO HELP THE BUSY READER—

When a Houston **contractor turned builder of an experimental all-electric home** for the recent Parade of Homes, he proved beyond a doubt that people want electrical features in their new houses and are willing to pay for them. See **page 18.**

Lighting gardens is a new contracting opportunity for enterprising contractors in the South and Southwest, and manufacturers in the industry are co-operating to provide them with the necessary materials. Some helpful hints for this type of work and a discussion of what several utilities are doing to stimulate consumer interest will be found in the article beginning on **page 22.**

Some very interesting information was disclosed by speakers and panel members in their discussions of **industry problems at the SEWA Annual Industry Day Meeting** held recently in Atlanta. For highlights of these talks and a summary of the meeting, turn to **page 24.**

One electrical maintenance problem has been dealt with successfully by a Dallas plant where **motor failures are eliminated by keeping motors warm.** The article on **page 27** gives details of the plan for keeping low voltage applied to motor windings when the plant is closed down.

The "Utility Engineers' Forum" is highlighted this month by another installment of the series on **distribution substations in system planning,** which begins on **page 36.** The article deals with selection of the most economical substation size for a given set of assumed conditions.

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Patent applied for

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Economic comment

by J. Whitney Bunting, Ph.D.

Labor-management relations – Part III

◆ ONE OF THE MOST EQUITABLE solutions to the labor-management controversy is provided by proper educational programs. Inasmuch as the problem is quite naturally one of human relations, proper training can be utilized to better conditions.

Many programs under way

At the present time there are many educational programs either under way or in the process of development. There are almost as many goals as there are programs. Unfortunately, the majority are "trade" programs that tend to leave human relations on the outside.

Practically all labor organizations have an educational plan of more or less consequence. They range all the way from anti-Taft-Hartley programs to extremely sound collegiate level programs with first-rate educational authorities at the helm. In large part, the national officers of labor unions are more interested in the development of sound programs that are local or state labor authorities.

The stumbling block

Industrialists have developed educational plans as well. Many of our largest firms have set up training programs that would make many colleges envious. And they have not been afraid of the expense involved. On the small industrial level, some business men have combined in co-operative effort to do the job. Regrettably, however, management and labor alike must visualize immediate "pay" results if they are to accept an educational program. This is the fact that leads to a diminution of the value of many otherwise well-conceived programs.

Colleges, technical schools, and governmental agencies have fallen victims to the same pressure when they have attempted to enter this critical field of education for labor-management relations. In turning to labor and management leaders for advice and criticism, the inevitable question is, "What value (money) may we expect to receive from participation?" Again, there is a failure to recognize the fundamental fact that training is needed in better human relations and not in the procedures of contracts, bargaining, and strike votes.

Comprehensive program needed

A proper educational program for labor-management relations cannot be conducted on a single level. In fact, it calls for training at all levels of the industrial organization. But above all, it needs training in those fields where better understanding can be developed within management and labor ranks alike.

Much can and should be done towards the development of a knowledge of industrial psychology. This does not mean clinical or experimental work, but a "down-to-earth" analysis and presentation of the facts concerning the working relationship of one man with another.

There is but little understanding of each other's productive efforts. Where labor and management do not understand the productivity of each other, there is no opportunity for a development of mutual trust. Above all, training in this field should be given impartially with ample opportunity for discussion of critical problems.

Answer is a simple one

Until labor-management educational programs consider the importance of the development of mutual respect among all parties concerned and the impartial presentation of the truth, they have missed their goals. There is no place for propaganda in the field of labor-management education.

The moral of this presentation is purely a simple one. But, in effect, the simplicity of it has caused many people to disregard it in their deliberate search for a complex phenomenon. Labor relations is not a mechanical process, for it stems from the contact of one man with another. As labor and management increase in strength, then perhaps the primary relationship becomes more complex. To solve a complex problem, it is necessary to break it down to its most elementary construction; just so with labor relations.

The elements noted in preceding portions of this paper are basic ones. They must be studied carefully by labor and management alike if a calm solution to present difficulties is to be found. Both parties must come to understand that the fundamental need is to be able to communicate ideas reasonably and clearly to representatives of the other side. Force must be kept at a minimum. This communication should be such that a clear understanding of each others' problems will be gained at the bargaining table.

Goal of greater productivity

The goals of both sides should be greater productivity and the consequent "better life" for all concerned. In this respect, the general public would agree unhesitatingly. High wages or high profits, in monetary terms only, has but little significance in our economy. It is the supply of goods and services that measures the success or failure of our economic system.

Both parties need basic training, not perhaps in the handling of production or the specific techniques by which they handle their operations, but education is needed in the field of social relationships. Only in this manner can labor and management return to a position of trust, mutual respect, and tolerance, so traditional in the American economic system.

Dr. Bunting, well-known southern economist, is president of Oglethorpe University, Oglethorpe Univ., Ga.

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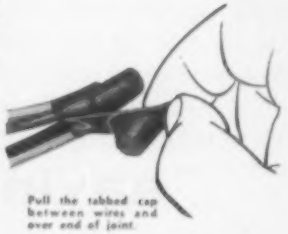
Push "Wrap-Cap" down over sleeve.



Pull the tabbed cap between wires and over end of joint.

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with the Double - Indent Crimping Die

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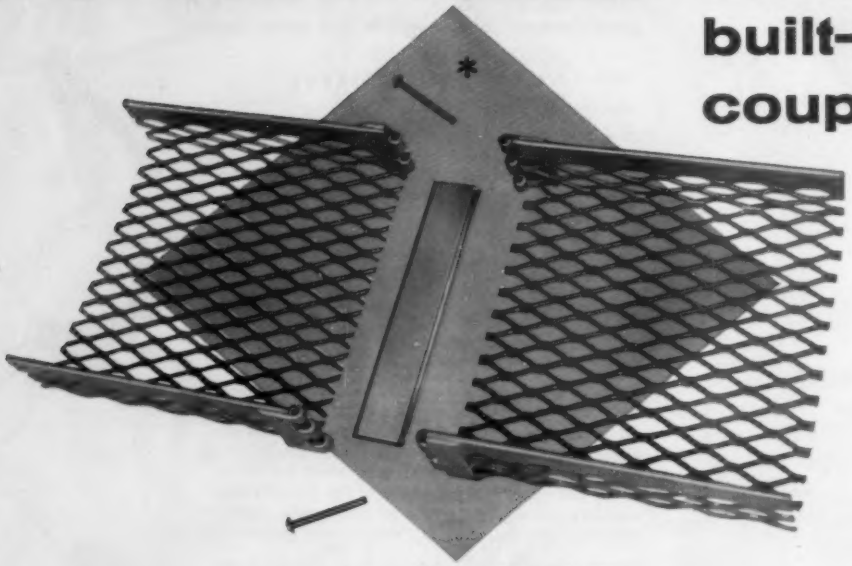

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1011—Electrical Conduits

"Natural Electric Conduits" is the title of the 30-page Catalog No. 603 which describes and illustrates the many types of electrical conduits that are manufactured by National Electric Products Corp., 2 Gateway Center, Pittsburgh 22, Pa.

1015—Squeezon Connectors

The Squeezon, a new compression connector for power lines, is fully described in bulletin "SQ" available from the James R. Kearney Corp., 4236 Clayton Ave., St. Louis 10, Mo. The Squeezon features greatly increased electrical and mechanical efficiency.

1019—Service Panels

Information on protective electrical control centers for homes, apartment buildings, service stations, and industrial applications is contained in Bulletin PM-355, "BullDog Pushmatic Electric-Centers," issued by BullDog Electric Products Co., 7610 Jos Campau, Detroit, Mich.

1051—Transformers

"Care and Maintenance of Marcus Dry Type Transformers" manual No. M-100 goes into a complete description of the proper method of installing dry type transformers, particularly Class B, in all of the sizes which they are available today. Marcus Transformer Co., Inc., P. O. Box 551, Rahway, N. J.

1071—Plugs and Receptacles

Additional loose-leaf sheets for insertion in the Pylet Catalog 1100 are available from the Pyle-National Co., 1354 N. Kostner Ave., Chicago 51, Ill. These pages describe a wide range of plugs and receptacles for special purposes.

1079—Washer Lugs

Krueger and Hudepohl, 3 E. Third St., Cincinnati 2, Ohio, in their Bulletin 8-DF, give information and catalog listings for their complete line of K&H solderless terminal folding double cupped washer lugs. The folder explains uses and applications of all the lugs.

1081—Busduct Data

Various applications of the FA busduct for industrial purposes are illustrated in this bulletin made available by the Frank Adams Electric Co., P. O. Box 357, St. Louis, Mo.

1085—Lighting Fixtures

Eastern presents their most complete catalog, 32 pages of engineered lighting data, including a variety of fixtures for all architectural, commercial and industrial applications. Eastern Fixture Co., Inc., 170 Vernon St., Boston 20, Mass.

1087—Fittings Catalog

The M. & W. Electric Mfg. Co., Inc., East Palestine, Ohio, has available their new 28-page catalog 53, covering Service Entrance Mast Fittings, Service Entrance Cable Fittings, Ground Clamps, Rods, BX and Romex Connectors, Conduit Fittings, Wireholders, Insulator Supports and Cable Racks.

1097—Cord Catalog

A complete 48-page catalog is available from the Cornish Wire Co., 50 Church St., New York 7, N. Y. containing all data on flexible and portable cords, lamp cords, heater cords, cordsets, radio and electronic wires.

1099—Lighting Fixtures

Fluorescent and incandescent luminaires for schools, offices, stores and factories are illustrated in a series of bulletins issued by Curtis Lighting, Inc., 6134 West 65th St., Chicago 38, Ill. The entire series or any individual bulletins may be obtained upon request.

1103—Electrical Connectors

Burndy Industrial Catalog 52, featuring a complete line of general-purpose connectors for industrial wiring is available. Published by Burndy Engineering Co., Inc., Norwalk, Conn.

1107—RW and RHW Wire

"The Ampere Squeezer," a booklet explaining visually the effect of ambient temperatures on current carrying capacities of RW and RHW Wire. Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass.

1109—Anchoring Devices

An illustrated 32-page catalog, No. 65, describing more than 25 anchoring and drilling devices for making fastenings to masonry, is available from the Arro Expansion Bolt Co., Marion, Ohio.

ELECTRICAL SOUTH
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March, 1955

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1215	1217			

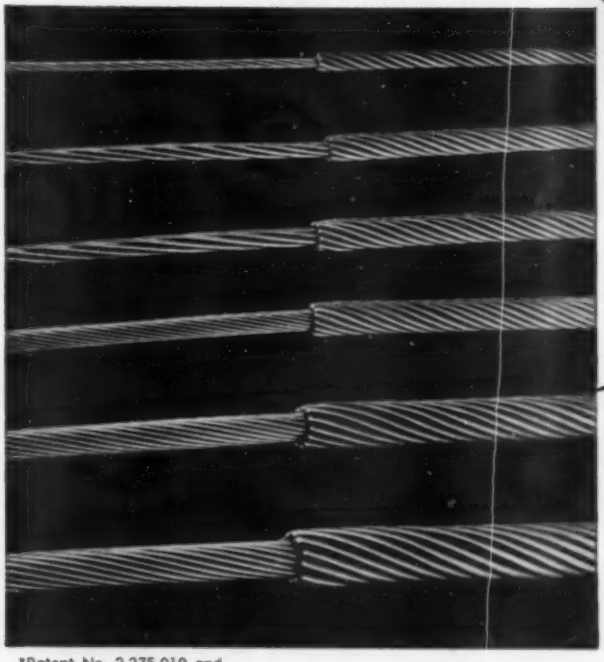
every good turn deserves another . . .

fine **FANNER** superformed **ARMOR RODS**

EXTRA QUALITY* where QUALITY COUNTS

*here

Exclusive end chamfering completely eliminates burrs and sharp edges. No danger of nicking conductors . . . or scratching linemen's hands.



*here

Exclusive forming method provides precisely formed rod contours, held to extremely close tolerances, and free of surface blemishes.

*here

Improved rod designs, tailored for easy application and made of high grade spring-type alloys, result in a tight grip and the elimination of "crowding."

*here

Wide range of sizes available for shipment from stock in improved packages. Only Fanner Superformed Armor Rods are protected along their entire length as well as ends.

*Patent No. 2,275,019 and other patents pending.

Fine Fanner Superformed

With all these extra features (and more too), fine Fanner Superformed Armor Rods cost you no more than ordinary rods. Like all fine Fanner products, Fanner Superformed Armor Rods are outstanding in quality . . . based on sound engineering experience and over 50 years of manufacturing know-how. Write today to be placed on our mailing list.

THE FANNER MANUFACTURING CO.

BROOKSIDE PARK • CLEVELAND 9, OHIO

Established 1896

1115—Remote-Control Wiring

An eight-page, non-technical booklet on remote-control wiring, publication No. 16-330, written expressly for the consumer, is available from the G.-E. Construction Materials Dept., Bridgeport 2, Conn. The booklet gives a picture story on the convenience, safety, and economy of this new wiring method.

1131—Fluorescent Units

Fluorescent Units for Slimline Lamps. This new, illustrated, 20-page bulletin gives complete specifications of general purpose, "Magna-Flo" lighting systems for 96, 72 and 48-inch, T12 Slimline lamps. Write Benjamin Electric Mfg. Co., Des Plains, Ill., and ask for bulletin "mf."

1135—Wiring Devices

Catalog No. 51, containing complete electrical wiring device line of Leviton Mfg. Co., Brooklyn 22, N. Y., is a 96-page thoroughly illustrated one. Included are such features as the Kwik-change line, with wiring diagrams, a general index, and an index to catalog numbers.

1151—Circuit Breakers

A concise and well-illustrated 28-page catalog, No. C. B. 1000, on the new Stab-Lok Circuit Breaker System has been announced by Federal Electric Products Co., 50 Paris St., Newark 5, N. J. Advantages of the system comprise headings under which are listed complete specifications.

1153—Wiring Devices

A new catalog issued by Clyde W. Lint Co., 2323 West 18th St., Chicago 8, Ill., discusses details of the company's line of tools and electrical wiring devices, pole line hardware, and standard porcelain.

1155—Wire and Cable

Two catalogs—Bulletin RS-5, and Power and Control Cables, No. 24—available from Rome Cable Corp., Rome, N. Y. Power and Control Cables catalog is intended for utility, construction, and industrial engineering and purchasing personnel as a guide in selection of proper wire and cable types.

1163—Connection Methods

A 20-page booklet illustrating practical and proved methods of making good connections with aluminum conductor, especially in distribution lines and service drops. Available in any quantity desired free of charge from Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, Calif.

1167—Industrial Lighting

A four-page catalog insert is now available from the Multi Electric Mfg. Co., Inc., 4223-43 West Lake St., Chicago 24, Ill. The leaflet describes Multi's line of lighting equipment and wiring devices, which include floodlights, vaporproof fixtures, and fluorescent and incandescent fixtures.

1169—Lighting Fixtures

Fluorescent and slimline luminaires, for schools, offices, stores, etc. Illustrated in the new catalog issued by Sta-Brite Fluorescent Mfg. Co., P. O. Box 6352, Miami, Fla., may be obtained upon request.

1175—Slimline Fixtures

The Light and Power Utilities Corp., 1035 Firestone Blvd., Memphis, Tenn., has recently issued a new catalog describing its line of fluorescent and slimline lighting fixtures. Typical installations of the fixtures are shown and discussed.

1177—Portable Furnaces

A new eight-page folder has been issued by Meier Electric and Machine Co., Inc., 3525 East Washington St., Indianapolis, Ind., giving descriptive information on the company's line of small electrical heating units. The booklet explains how the equipment may be used as primary or auxiliary heat.

1183—Electrical Equipment

The Wadsworth Electric Mfg. Co., Inc., Covington, Ky., has issued a new catalog Con 15-0 and Bulletin W. C. B. 53-1, containing data on their lines of Safety Switches, Service Equipment Distribution Panels and "E-Z-RED" Circuit Breakers.

1195—Kitchen Ventilation

Descriptive eight - page folder, Bulletin 620H, showing typical installations of all models in the Clipper line of ventilators is available from Trade-Wind Motorfans, Inc., 5725G S. Main St., Los Angeles 37, Calif. Folder includes dimensional drawings of installations helpful to building and electrical contractors.

1197—Convenience Outlets

Four-page bulletin gives complete information on the new P&S No. 500 for adding extra outlets to existing installations. Everything you need in a single package—no steel boxes required. Available from Pass & Seymour, Inc., Dept. ES, Syracuse 9, N. Y.

1199—Volt-ammeter Catalog

Amprobe Catalog No. 134 shows a complete line of snap-around volt-ammeters. Available from Pyramid Instrument Corp., Lynbrook, N. Y., the catalog includes detailed specifications and features of three high-voltage Amprobe Junior models for industrial use; four Amprobe Junior models for electricians and service men; new Amprobe Energizer.

1203—Incandescent Lighting

Catalog includes technical data, specifications and recessed, indirect, semi-indirect, specific location and general lighting units, as well as equipment for processed lamps. The Art Metal Co., 1814 East 40th St., Cleveland 3, Ohio.

1205—Radiant Electric Heating

Complete information on Thermo-Ray Radiant Electric Wall Heaters is found in descriptive literature and article, "How to Sell Electrical Heating" available from ThermoRay Corporation, South Buckhout Street, Irvington-on-Hudson, New York.

1207—Heating Panels

Four page catalog in two colors completely describing the full line of radiant glass electric heating panels for wall mounting produced by Berko Electric Mfg. Corp., 212-40 Jamaica Avenue, Queens Village 28, N. Y. This catalog presents all specifications and features of Berko electric heating panels.

1209—Fluorescent Ballasts

Advance Transformer Co., 2950 N. Western Ave., Chicago 18, Ill., has recently completed the compilation and printing of a 20-page catalog on fluorescent ballasts and their use. Included are data sheets on available Advance ballasts and a comprehensive installation and operation section and testing procedures. Copies of the booklet are available on request.

1211—Fluorescent Fixtures

Catalog folder No. 911, "Peerlite by Guth," has been announced by the Edwin F. Guth Co., 2615 Washington Blvd., St. Louis 3, Mo. Copies of this new eight-page booklet are available from the company upon request. The booklet is designed for the lighting specialist, giving complete engineering data and dimensions.

1213—Cable Boxes

G&W Electric Specialty Co., 7780 Dante Ave., Chicago, lists in their Bulletin BA52 various styles of splice boxes, with and without armor and conduit fittings; and several different types of secondary and primary cable sectionalizing boxes.

1215—Electric Heating

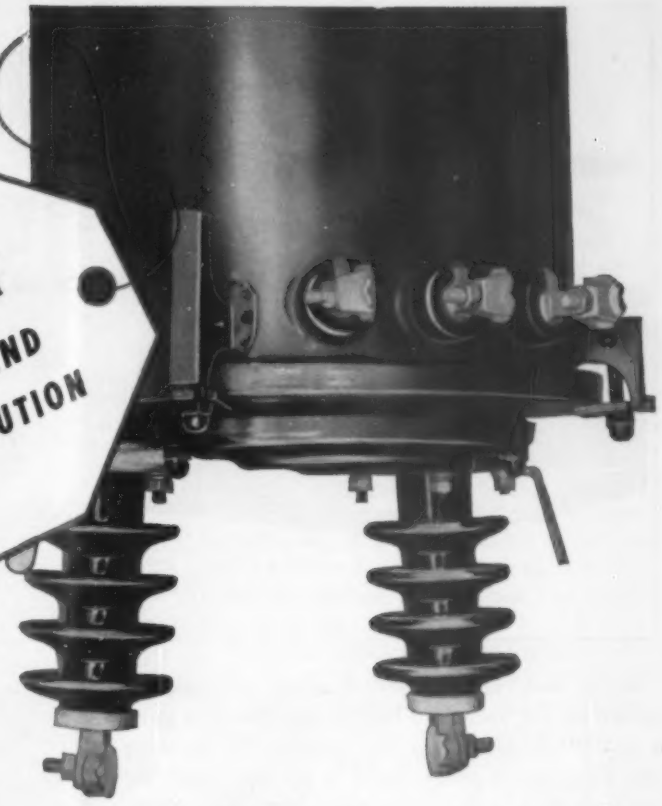
A new folder recently released by Electrend Products Corp., St. Joseph, Mich., describes with illustrations and charts the Electrend electric circulating air heating system for homes, offices and public places. Information in the folder also contains specifications and shipping data.

1217—Hinged Louvred Ceiling

Light weight, has no visible supporting tracks, producing unbroken louvre pattern in all directions. Perfect alignment assured—it's prefabricated. Louvred ceiling can be combined with fascia plates to form any architectural pattern desired. Catalogue No. 544 has full details including installation instructions. Neo-Ray Products, Inc., 315 East 22nd St., New York 10, N. Y.

KUHLMAN UPSIDE-DOWN TEST

INSURES AGAINST OIL AND AIR LEAKS OF DISTRIBUTION TRANSFORMERS



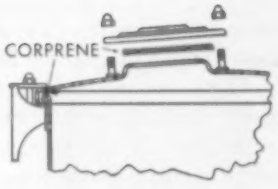
In addition to the thorough and exacting tests required by NEMA Standards*, all KUHLMAN Distribution Transformers up to 50 KVA receive a special upside down test, followed by a pressure test for air-tight, leak-free operation. First, the transformer is rotated 360° in a vertical plane to make sure there are absolutely no oil leaks, particularly in the vulnerable spots above the normal oil level line, where leaks are almost impossible to detect with the transformer in an upright position. Then a pressure test under simulated operating conditions prior to shipment provides a final check against oil and air leaks. Transformers above 50 KVA are pressure tested and checked for oil and air leaks with an electronic leak detector. KUHLMAN also spot tests all distribution transformers for impulse, audible noise, radio noise, and power factor in addition to NEMA requirements.*

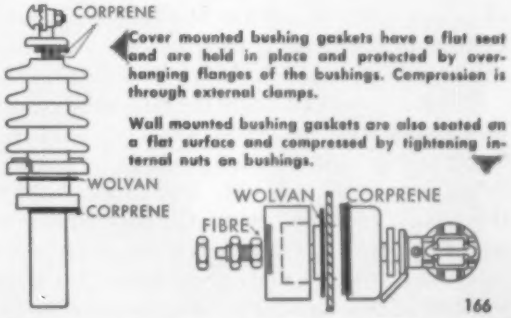
*KUHLMAN Distribution Transformers are tested as required by NEMA Standards for:

- winding resistance
- ratio
- polarity
- phase relation
- no load loss
- exciting current
- impedance
- load loss
- temperature
- applied potential and induced potential

Here is why KUHLMAN Distribution Transformers are air-tight, leak-free and moistureproof:

Cover and hand hole cover corprene gaskets are under constant uniform pressure insuring a permanent air-tight seal.





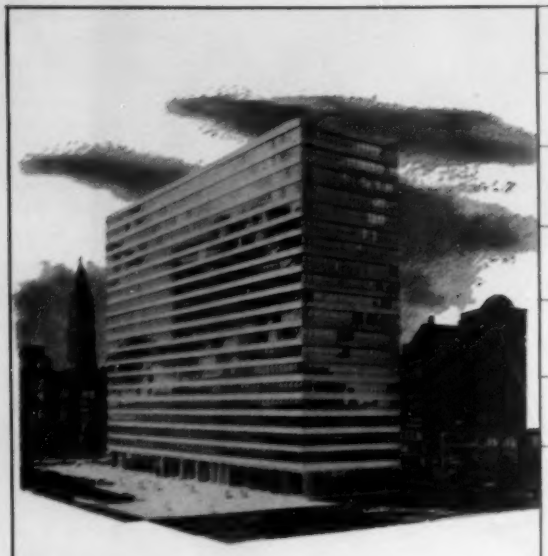
Cover mounted bushing gaskets have a flat seat and are held in place and protected by overhanging flanges of the bushings. Compression is through external clamps.

Wall mounted bushing gaskets are also seated on a flat surface and compressed by tightening internal nuts on bushings.

166

KUHLMAN

KUHLMAN ELECTRIC COMPANY, BAY CITY, MICHIGAN • CRYSTAL SPRINGS, MISSISSIPPI • SALINAS, CALIFORNIA



"When the specs for Three Penn Center called for the highest quality black enamel and galvanized conduit, we knew without question that SPANG® would meet these rigid specifications"

...says Harry F. Ortlip Company
Electrical Construction Specialists
Philadelphia, Pennsylvania

"We've been using SPANG Conduit in many installations for years and have always found it to be a *high-quality* product in every respect. We've never had a complaint about SPANG in all that time. We know SPANG's quality reputation from long experience and know it will give top performance in the new Three Penn Center Building."

That's the report from the Harry F. Ortlip Company. And that's why SPANG Conduit is being used exclusively in this new, ultra-modern Philadelphia office building. By the time the building is completely ready for occupancy, hundreds of thousands of feet of SPANG Black and SPANG Hot-Dipped Galvanized Conduit in sizes ranging from half-inch to four-inch will have been installed.

This is another example of the confidence electrical contractors have in SPANG Conduit. They know SPANG is a *quality-controlled* product . . . know that SPANG is easy to work with, easy to cut, bend and thread . . . know that SPANG Conduit finish is tops . . . know that it will assure years of satisfactory service . . . know that SPANG Conduit will save installation time and cut installation costs.

You can profit by using *top-quality* SPANG Conduit in your electrical installations. Your local SPANG Distributor carries the complete SPANG line. He'll be glad to serve you.

Owner: Three Penn Center Plaza, Inc. (Uris), New York, New York
Builder: Uris Brothers, Inc., New York, New York
Architect: Emery, Roth & Sons, Inc., New York, New York
General Contractors: Cauldwell-Wingate Co., New York, New York
Electrical Contractor: Harry F. Ortlip Company, Philadelphia, Penna.
Spang Distributor: Westinghouse Electric Supply Company, Philadelphia, Penna.

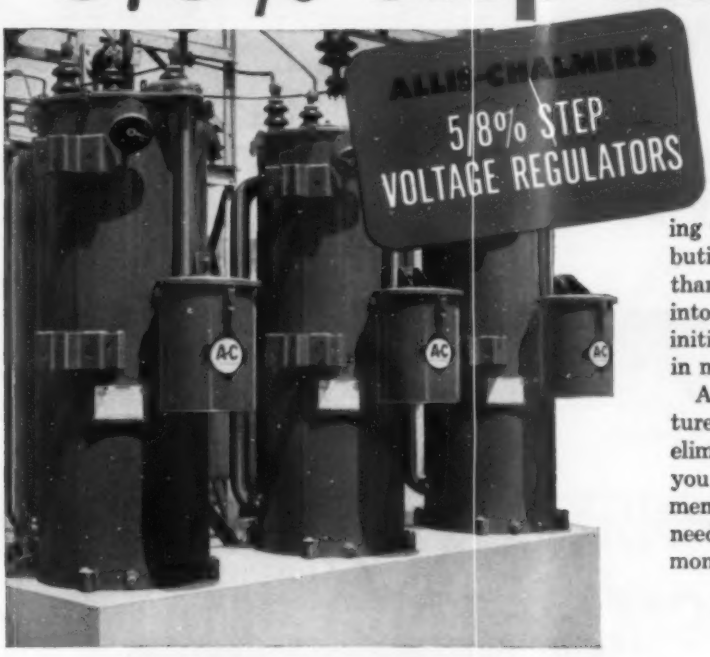
Because of its excellent corrosion resistance, SPANG Hot-Dipped Galvanized Conduit is used for underground installation at Three Penn Center.

Electricians finish the 18th floor installation. Cement will cover the conduit; wires will be added later. Total power for the building will be 6000 kw; dual 13,200-volt service will be provided by Philadelphia Electric Company.

SPANG® CONDUIT

SPANG-CHALFANT
Division of The National Supply Company
GENERAL SALES OFFICE:
TWO GATEWAY CENTER, PITTSBURGH, PA.
District Offices and Sales Representatives in Principal Cities

HOW to add revenue with 5/8% Step Regulators

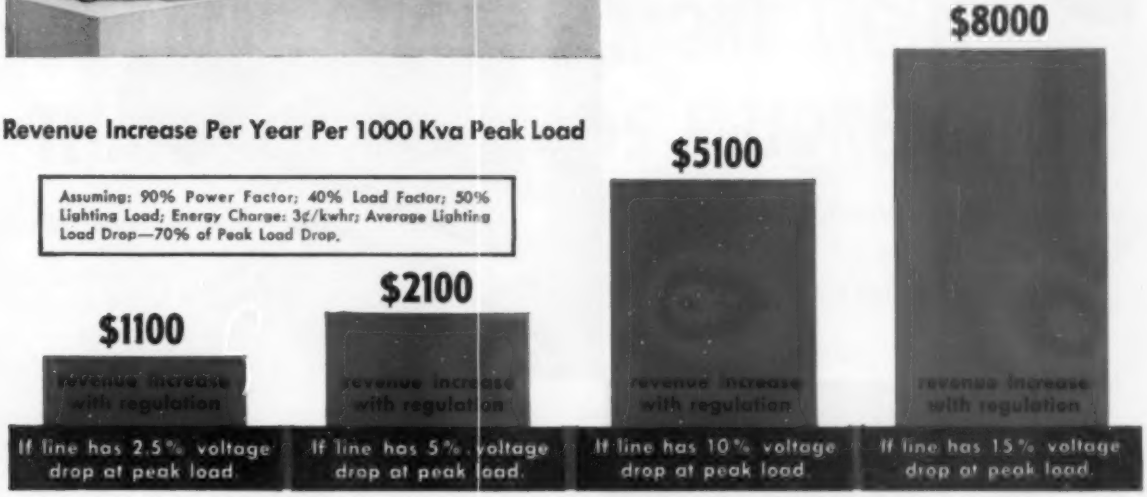


With only 5% low voltage at peak loads, you can increase revenue $2100 per regulator the first year by correcting voltage with an Allis-Chalmers distribution regulator. That increase is more than the regulator costs. Taking all factors into consideration, it's enough to pay back initial investment in less than two years, in most cases.

And you improve your maintenance picture too. With A-C regulators reducing or eliminating complaints due to low voltage, you get more from service crews and equipment. Use them where they are really needed instead of wasting manpower and money testing voltage at customers' homes.

Revenue Increase Per Year Per 1000 Kva Peak Load

Assuming: 90% Power Factor; 40% Load Factor; 50% Lighting Load; Energy Charge: 3¢/kwhr; Average Lighting Load Drop—70% of Peak Load Drop.


$1100
revenue increase with regulation
If line has 2.5% voltage drop at peak load
$2100
revenue increase with regulation
If line has 5% voltage drop at peak load
$5100
revenue increase with regulation
If line has 10% voltage drop at peak load
$8000
revenue increase with regulation
If line has 15% voltage drop at peak load

Low Maintenance, Long Life Proved by Experience

When you specify an Allis-Chalmers voltage regulator you know you'll get a unit with minimum maintenance, longest possible life. No other 5/8% step regulator gives you proof from years of actual field experience. Allis-Chalmers step-type regulators — all using the same basic designs — have been turning in excellent service records for over 20 years.

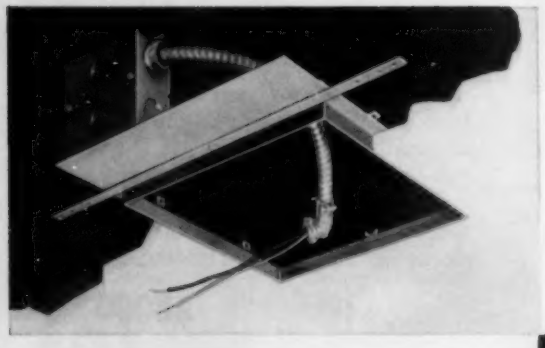
More facts are available. Get them from your nearby A-C district office or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4565

ALLIS-CHALMERS

ART METAL

makes your wiring

EASIER *and* FASTER



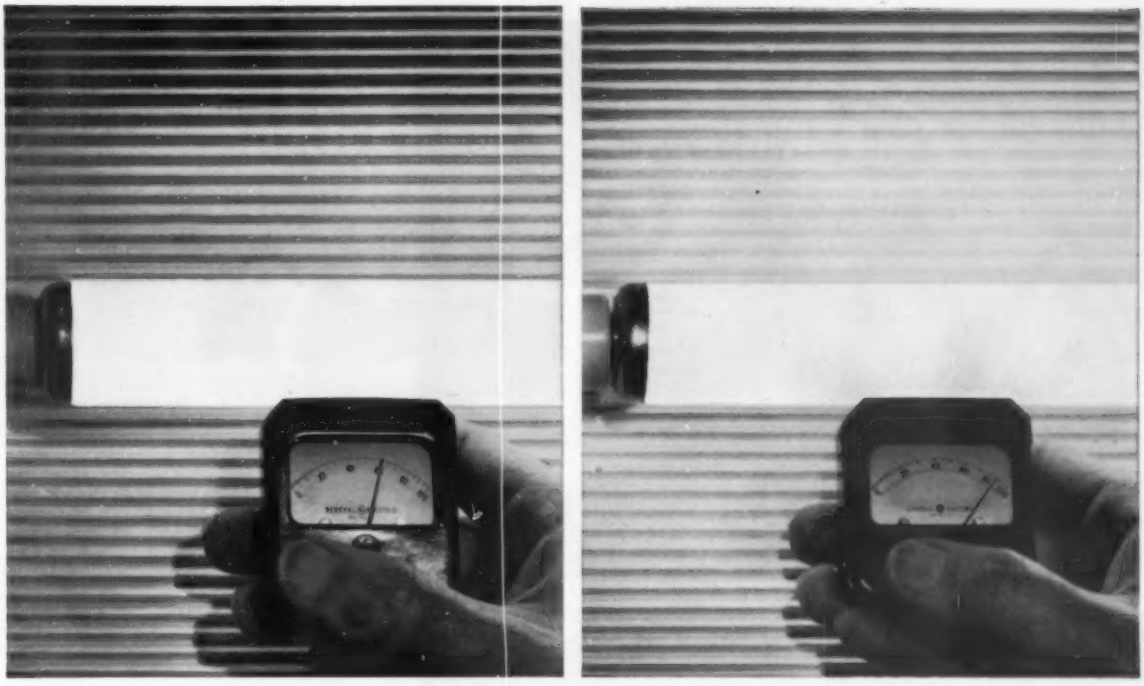
The Binary Plaster Frame of Art Metal units has complete installation equipment including attached junction box, wire, Greenfield and two mounting rails.

Complete specifications on Art Metal pre-wired plaster frame and lens boxes are found in Bulletin 254. We suggest you write for this bulletin . . . it'll show you how to save installation time and money on your next job!

Art Metal recessed lens box housings are easily installed as the job nears completion. Vertical slotted mounting holes provide adjustment for ceiling thickness from ½" to 2".

THE **ART METAL** COMPANY

CLEVELAND 3, OHIO



Photos above show relative difference in light output of regular slimline, left, and New High Output Rapid Start lamp, right.

NEW GENERAL ELECTRIC FLUORESCENT LAMP GIVES ⅓ MORE LIGHT THAN ANY PREVIOUS FLUORESCENT

LIGHTS ALMOST INSTANTLY—General Electric announces the most important advance in fluorescent lighting in 10 years: the new High Output Rapid Start fluorescent lamp. The 96-inch High Output lamp gives 36% more light than the most powerful G-E fluorescent lamp previously available.

For new installations, General Electric High Output lamps offer this ⅓ bonus of light without increasing the number of fixtures or maintenance costs.

This big increase in light, with no increase in lamp size, has been achieved through a special cathode developed by General Electric which permits a boost in lamp wattage to 100. Because the cathode is of the famous General Electric triple coil design, these Rapid Start lamps light up almost instantly. General Electric High Output lamps have a rated life of 7,500 hours, the same as all General Electric general lighting fluorescent lamps.

A new G-E base and socket design protects the lamp contacts by recessing them. A simple push-pull sets the lamp in its fixtures.

HAS VARIETY OF USES

The new General Electric High Output fluorescent lamp is especially suited for use in areas with high ceilings, in factories, warehouses, offices and stores. Also in store windows, showcases and other places where you want higher lighting levels in keeping with the modern trend. New fixtures designed for the G-E High Output lamp will soon be available from a number of lighting fixture manufacturers.

For information, write to Lamp Division, General Electric Company, Dept. 166-ES-3, Nela Park, Cleveland 12, O.

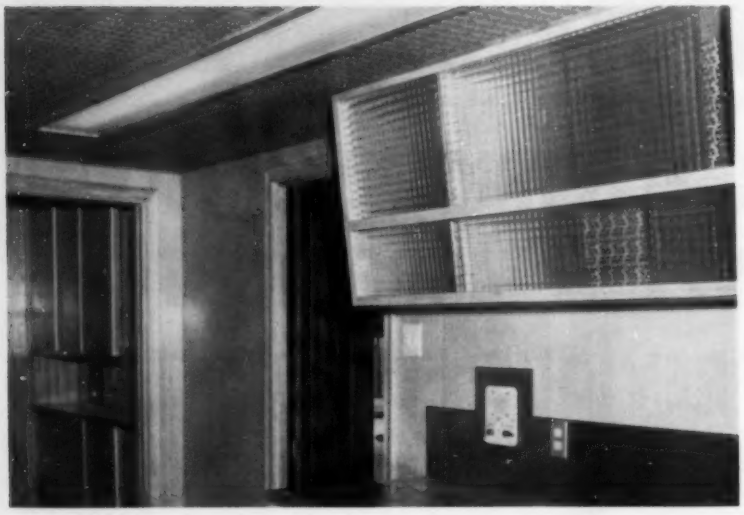
Progress Is Our Most Important Product

GENERAL ELECTRIC

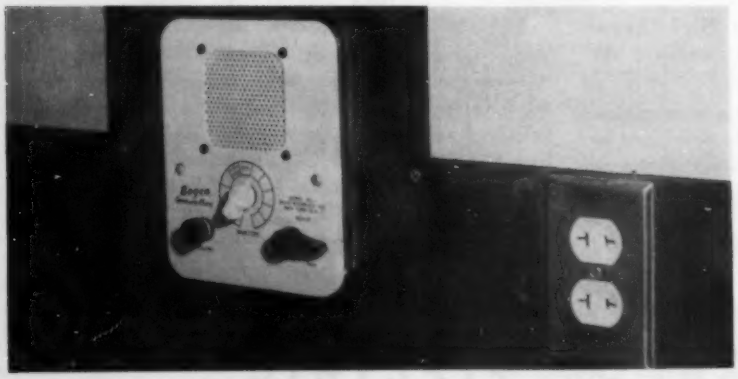
Exterior view of the Ralph Lowe — "Reddy Kilowatt" all electric home which was built for display in the 1954 Parade of Homes in Houston.

Electrical contractor, turned home builder, Ralph Lowe poses by the control switch of the radio-color TV-high fidelity installation, one of the features of his experimental all-electric home.

Contractor



Custom-designed glass installation showing matching bevel on glass used in overhead ceiling fixture and for sliding doors of kitchen cabinets.



Unit of the inter-communication system, one of which is located in each room.

◆ THE AMERICAN PUBLIC is not only able but willing to pay for the best electrical work and devices on the market. That's the point which electrical contractor Ralph Lowe, of Houston, had in mind when he turned builder for Houston's 1954 Parade of Homes.

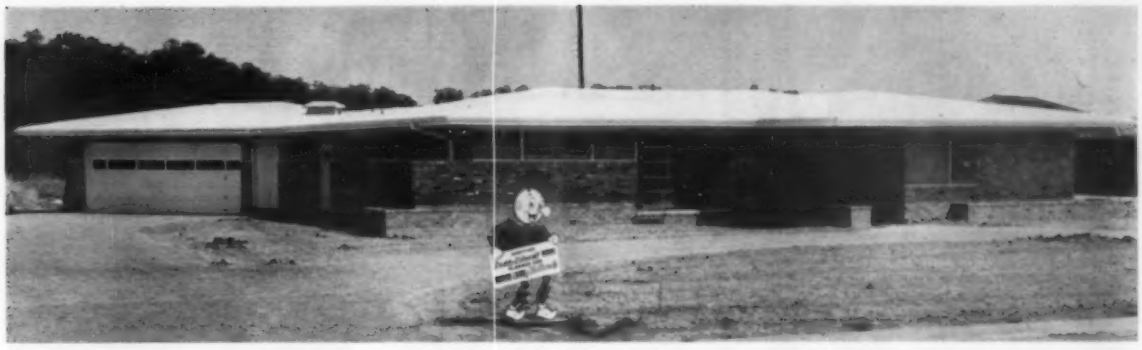
And though Mr. Lowe has no intention of leaving the electrical field to become a speculative builder, he is more firmly convinced than ever that money spent on electrical features in the home comes back many times over in customer approval.

Such homes are easier to sell, he thinks, because the average home buyer today is seeking the maximum in convenience and gadgetry. He will be more quickly attracted by unusual electrical features than by detailed technical discussion of innate good qualities of the home's construction, he believes.

Purposes of building

These views are borne out by the fact that Mr. Lowe's $50,000 home was sold even before the Parade opened, and during the Parade, more than 25,000 persons inspected its unusual features.

There were three main purposes behind the building of the Lowe Home. One was, of course, to obtain the valuable publicity which construction of such a home would



turns builder of experimental all-electric home

by Lucille Germany

invariably bring in local newspapers and on radio and television. In this Mr. Lowe was fortunate to have the full support of the Houston Lighting and Power Company, which further helped to spotlight the home by designating it as a "Reddy Kilowatt" home with the familiar caricature on a life-sized sign out front.

The other two purposes concerned acceptance of the electrical devices by the public. Mr. Lowe was interested in discovering whether or not there is a "saturation point" in the electrification of a home and, if so, approximately where that point is reached in the eyes of the average home buyer. He also wanted to discover which of the gadgets would receive the highest amount of public interest. In this manner he thought to fortify himself with material with which to encourage building contractors to increase electrification of their speculative residential construction.

Explanation of features

The Lowe home was equipped with 32 electrical circuits supplying current to the many unusual interior installations as well as to such exterior installations as patio floodlights, underwater lights for swimming pool and a push-button lawn sprinkling system.

During the Parade, officials of the Houston Lighting and Power Company, the Lowe firm, and designated "hosts" for the Parade, conducted guided tours through the home. Practicality of each special feature was emphasized and visitors were told in detail of the uses and operation of each device and how each could be adapted to homes of moderate price.

The inter-com speaker box, for example, installed in the entryway and trimmed in brass to match door hardware, was cited as a practical safety device allowing the housewife to identify visitors before opening the door.

Complete inter-com system

Visitors were taken from the central radio-color TV-high fidelity phonograph installation in the east wall of the family room to the individual speakers installed in every room. Volume control was demonstrated, use of the intercommunication system and intercom master switch in the master bedroom were carefully detailed.

Wall dimmers producing lighting effects in the overhead incandescent fixtures ranging from absolute darkness to 150-watt output were the target for a great deal of public interest, causing Mr. Lowe to predict vast popular acceptance of such installations in average-priced homes in the near future in the Houston area.

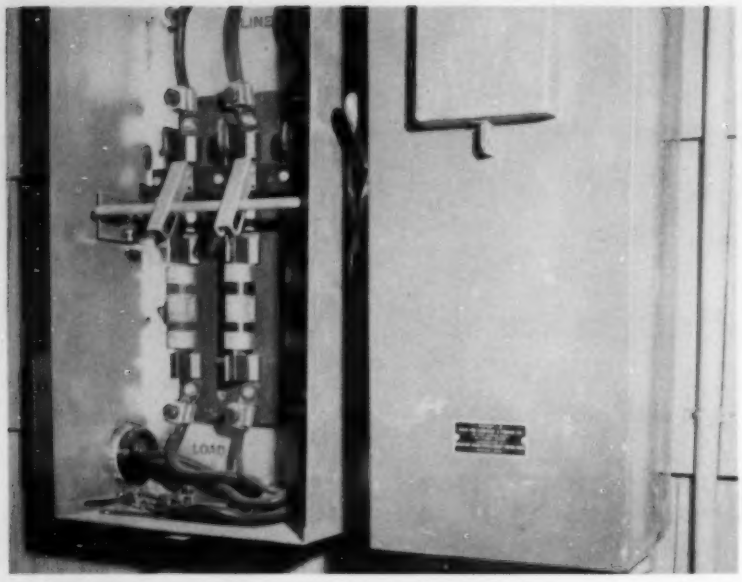
Though most of the Lowe home lighting was installed in overhead flush fixtures, the dining room featured an outstanding modern brass adjustable drop light as a concession to the traditional preference for hanging fixtures in the dining area.

Lighting features

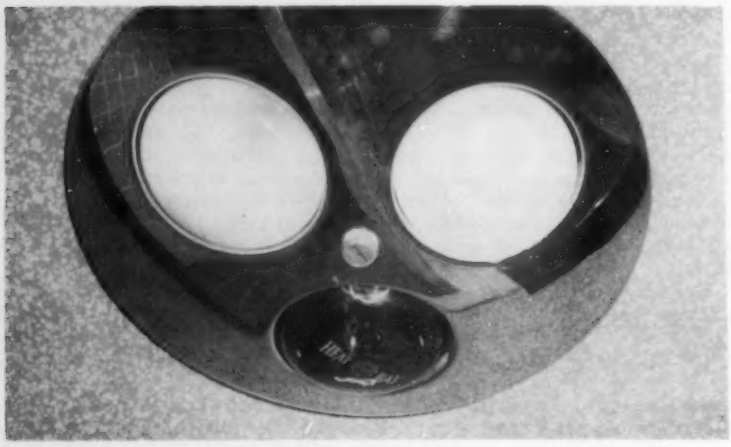
Visitors were conducted from room to room following the continuous "path of light" made possible by dual action switches in every room. Low output night lights, installed near the baseboards in the central hallway, as well as special three-way flush ceiling fixtures, installed in the home's three bathrooms and providing incandescent lighting, solar ray, and infra red heat ray were two of the home's most salable features, Mr. Lowe believes. Though neither has been used to any great extent in average priced homes in the Southwest to date, Mr. Lowe believes they will become increasingly popular during the next few years.

Humidifying system

Guides were instructed to call special attention to the major electrical features including the Precipitron, air-conditioning and dehumidifying unit and completely equipped utility room including



Working "heart" of the all-electric home is the outside fuse box. This box is the only exterior indication that the home is wired at all. All wires from the pole were brought in through underground conduit.



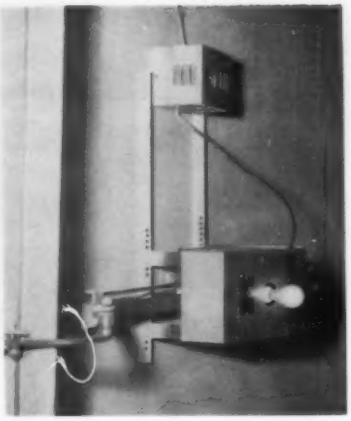
This three-way incandescent lighting, solar ray, and infra red heat ray fixture installed in the ceilings of the home's three bathrooms caught the public's imagination and have prompted Mr. Lowe to predict a bright future for them in average-priced homes to be built.

foot-controlled drinking fountain, dryer, washer, home freezer and ironer. The Precipitron, designed to cleanse the air of 99 per cent of its dust, pollen and odors, is already being installed in many homes in the Southwest.

Heat pump promotion

The five-ton year-round air conditioning and heat pump unit is one of the first such units to be installed in the Southwest. The unit utilizes no fuel other than electricity and is a relatively new development for electricity in that application. The main problem in increasing the popularity of this unit is to awaken people to the realization that such an installation is directly competitive to other forms of year-round air conditioning and is not to be considered limited to high-priced homes.

Mr. Lowe is currently discussing with a number of his customers



Push-button garage door installation, another electric feature.

the installation of many of these features. He can't yet evaluate the dollars-and-cents result of the display home, of course. But he is hearing in increasing numbers from persons who have seen the home and have been impressed both by the ease of operation and the added safety and convenience of the features. Many are seriously considering incorporating such items as controlled lighting and inter-coms in their building plans, This is the major result which Mr. Lowe hoped to obtain from his model home.

Display value cited

"I wasn't expecting any overnight landslide of people clamoring for Precipitrons or push-button garage doors," he said, "But I am confident that display homes like mine, where people are allowed to wander and inspect at will, and at the same time are shown the operation and uses of these devices, will point the way to an entirely new concept in home design and construction from the electrical contractor's standpoint. We did help to free a lot of people of doubts about the practicability of these features, and we did away with a lot of fear about their price. If other electrical contractors will 'talk up' convenience and long-range economy and will work even more closely with builders and architects to educate the public on the benefits of large-scale electrical planning—then the future of our industry will be very bright indeed!"

National Adequate Wiring Bureau announces new campaign material

◆ A NEW 1955 electrical industry sales action program to put modern-day electrical capacity into the average American household was termed today by the National Adequate Wiring Bureau, New York City, the 'first program in 15 years to cover the entire wiring waterfront.

The Bureau announced that distribution is now being made of adequate wiring campaign material for the year ahead, in the form of a single master package usable by every branch of the industry. First introduced to conferees at the 11th Annual Wiring Conference held in Chicago recently, the master kit will go to chapter managers of contractor associations and the Bureau's extensive mailing list of electrical industry leaders at the local level directly concerned with the promotion of adequate wiring.

Co-operative effort

The wide-ranging promotion effort was seen as evidence of an industry belief that long-sought coordinated action by all electrical business elements must become a 'working level' liaison.

Seven separate kits for specialized use, as contained within the covers of the master package, were described as the electrical industry's seven keys to sales success, by L. E. Barrett, chairman of the National Bureau's Plan Committee. "These seven kits are our seven keys opening doors to sales opportunities for everyone in the electrical field.

"We are now able to offer material developed individually for the wiring modernization market, for the new home market, for electrical contractors, for electrical dealers, for the educational field, and for the formation of new local adequate wiring bureaus. Each group whose economic life is affected by the status of home wiring is thus able to see exactly what sales implements he will have when he starts to sell adequate wiring; and exactly what tools his allies are using.

"This gives him needed perspective on what the entire industry is doing to achieve the same result. It will put an end to the feeling which the lone promotion-minded contractor, for instance, sometimes justifiably has had—that he alone is out there struggling with the problem of educating the consumer in the fact that electrical living and wiring are inseparable twins. This year he can be assured that we know it's a national problem, being attacked at many levels. The evidence is all put before him at meetings of his electrical group."

Promotion of home wiring modernization, an activity which has been spreading during the past year with the advent of wiring financing plans in 25 power company areas in the United States, is supported by five sales aids in the 1955 master campaign kit. Two new 9 x 11-inch booklets are provided. One, titled, "Improving Your Home's Wiring System," is a two-color, 16-page consumer publication. The other, "Wire-on-Time Plans That Tick," contains a step-by-step description of the mechanics involved in setting up financing plans for wiring modernization. Its companion piece is a consumer folder, "What's All This About Wiring on Easy Monthly Payments?"

(*Continued on page* 106)

Good wiring can help builder sales! These sales promotional pieces for builders are part of the National A-W Bureau's master sales kit for 1955 for the electrical industry and its sales allies. New home construction market package contains new residential wiring standards, materials used in certifying wiring, direct mail and handouts literature.

Lighting gardens

new contracting opportunity

by Baron Creager

◆ THOUSANDS of householders throughout the South now have a desire for a night-lighted garden, or lawn, or both; all they are waiting for is someone who will produce a plan and sell them the necessary wiring and fixtures.

For the attractions of outdoor living with the intrigue of soft night-lighting has been impressed upon those householders through magazine articles, discussions before clubs, and the isolated cases of such lighting projects they have seen or heard about.

Basic ideas for this type of lighting are available and so are the fixtures—modernized in a sense that these fixtures blend with all manner of foliage, shedding their light with appropriate diffusion—even to water-proof fixtures that can be submerged in pools.

Contractor's first step

All that remains, it seems, is for the progressive contractor to install a carefully-planned pilot job, publicize it by the best available means, and let a natural desire of proud householders to "keep up with the Joneses" do the rest.

Availability of newly-designed fixtures has brought this field from the remote to the immediate state of possibility. These have been aptly described in a manner to appeal to the aesthetic senses of the householder, in an article in the *American Home*, one of the national magazines that exercises solid influence over the home. But first, sample the introduction—an introduction that did the preliminary selling job for electrical contractors, in these words:

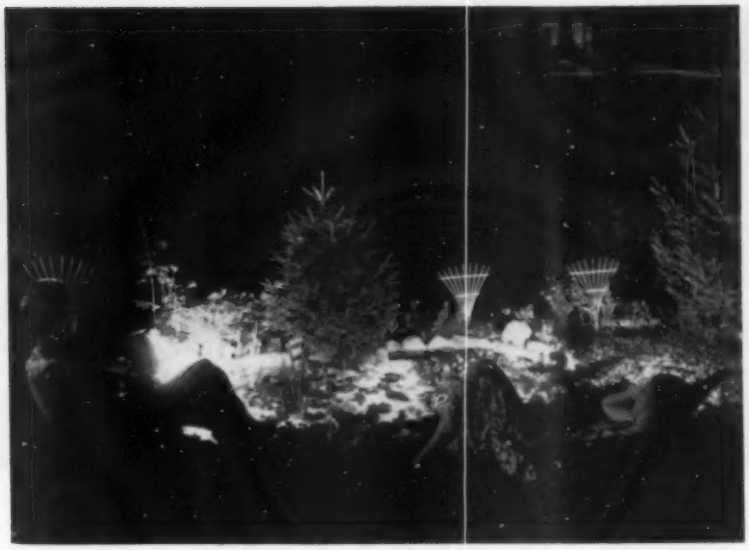
New fixtures, such as the life-like ones for holding bulbs in the flower bed in foreground, have added much to the interest in outdoor lighting.

Garden illumination around swimming pools provides light with beauty.

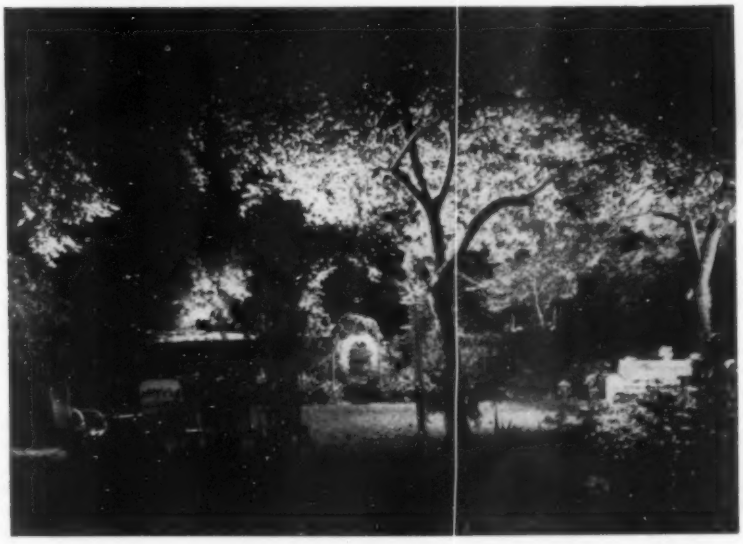
"Why should sunset abruptly curtail your enjoyment of your garden any more than it ends the pleasure in your home indoors? Increasing numbers of people with imagination who say it shouldn't, are taking advantage of modern garden-lighting methods and equipment and, to their delighted surprise, are finding the results neither expensive, complicated, nor difficult, but almost as casual a matter as connecting table or bridge lamps or any sort of electrical equipment in living room, kitchen, or where you will."

Then, getting into a description of fixtures, the *American Home* has this to say, in the succeeding paragraphs:

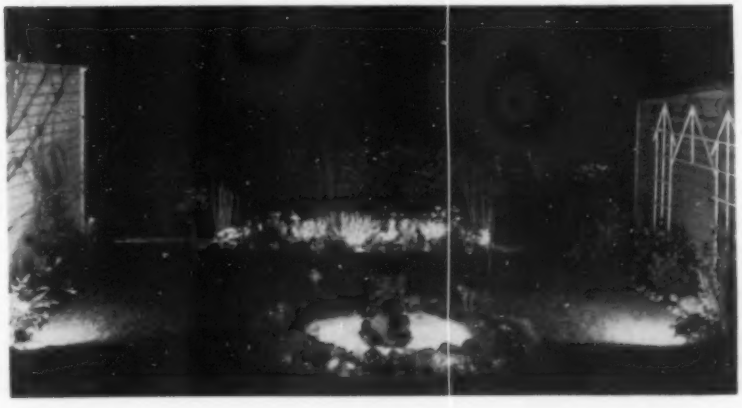
"As all lovers know, moonlight brings to a garden a fantastic, fetching magic which is never crude or harsh. Most early efforts to duplicate this effect used flood lighting which, literally, floods and



Pool lighting is concealed under rubber "lily pads" or in life-like frog fixtures.



Effective lighting is achieved by concealing bulbs in foliage of trees and flower beds, as well as with the use of underwater illumination of lily pools.



flattens an area and destroys its beauty. Modern, man-made illumination is softer; like moonlight, it comes from a distance and, so far as possible, from hidden sources.

Life-likeness employed

"Today, garden lighting equipment is not rigid, metallic and ugly by daylight, but natural in form and color, like lily pads (of rubber) that float serenely on a pool with lights attached below them; a lifelike frog with an inner light; a shield in the form of a rock, so realistic you do not notice it; a tree-stump reflector that blends with its living neighbors; leaf shields that merge with the plants around them."

The author did a limited amount of research on adequate wiring and safe practice, treating the matter of installation as one of "two easy, inexpensive methods." Molded-rubber, one-piece cord sets could be led from spot to spot, it was stated, or "extra-heavy durable cable" could be laid in a trench a few inches to a foot deep.

Installation cautions

But the editor made up for that, coming to the rescue of sane and adequate installations with this footnote:

"One caution, of course; or, rather, two. Be sure all electrical installations are done properly, with approved materials and so calculated as not to put excessive loads on your circuits and permanent wiring. Second, in placing utility floodlights, or any sort of overhead lights, take care that they do not throw an unsuspected blinding glare either into your own yard or driveway, or into the street or a neighbor's property.

"In addition to firms that make or sell garden lighting equipment, many large manufacturers of electrical equipment, and many public utility companies, can supply helpful information on this subject."

Utility promotions

Meanwhile, at least two of the larger electric utility companies in the South—Dallas Power and Light Co., and Georgia Power Co.—have taken direct action to stimulate consumer interest in garden and lawn lighting.

Ruth Patterson, lighting consultant for the Dallas Power and Light Co., last year found sufficient interest in outdoor lighting in Dallas to justify a series of talks be-

(*Continued on page* 105)

Members of the Industry panel at the SEWA Industry Day Meeting, left to right: Patrick E. McCaughey, general product manager, Federal Pacific Electric Co., Newark, N. J.; John B. Muller, Eastern sales manager, Sylvania Electric Products, Inc., New York City; L. B. Shank, National Electric Products Corp.; J. B. Carson, Kingsport Electric Co., Kingsport, Tenn., moderator. First three represented manufacturers.

Industry problems analyzed

◆ IN ITS OBJECTIVE to bring together the leaders of the four principal branches of the electrical industry, the 1955 Industry Day Meeting of the Southeastern Electrical Wholesalers Association, held in Atlanta in February, was outstandingly successful. More than 400 representatives of the manufacturing, wholesaling, contracting, and utility branches of the industry were in attendance.

In addition to a series of special talks, the meeting included a forum type discussion period with an industry panel consisting of manufacturers, wholesalers, and contractors.

Opportunities cited

The keynote address of the meeting was presented at the opening session by Don B. Clayton, president, National Electrical Contractors Association, whose subject was "Shall We Take Full Advantage of Today's Opportunities?"

The electrical industry seems to have a talent for keeping itself well supplied with problems, Mr. Clayton said. One of these is the relation between the electrical contractors and wholesalers.

Electrical construction volume in 1953 and 1954 for electrical contractors amounted to $1 billion in material and $875 million in labor. Distributors in handling this material must have had problems in making a profit on this business. Mr. Clayton then outlined what he considered to be the wholesaler's function and the contractor's function, and pointed out that only on this basis with each group fulfilling its own functions will the industry reach its full potential. The electrical industry is going to have to work together if business is not lost to others who are already looking over this field.

Mr. Clayton explained that residential modernization work potential totaled $9,000,000,000. New residential wiring totals about $1,000,000,000 for 1955, of which 35 per cent is for materials, 40 per cent for labor, and about 25 per cent for overhead and profit.

Mr. Clayton estimates that there exists a potential of $6,000,000,000 in modernization for industry, commercial establishments, etc. The immediate prospects are such that there will be enough business to keep contractors busier in 1955 than they were in 1954 or 1953. But contractors are going to have to take more interest in the residential business potential. New appliances such as room coolers and clothes dryers require special circuits. Nearly all homes require larger services.

There is a great need, he said, for promotional activity at local levels on wiring modernization. When only one group participates in such local promotion, the public is apt to get the impression that they have a selfish interest.

In discussion of wholesaler functions further, Mr. Clayton said that the furnishing to contractors with services they should supply themselves, and extending them long credit is unfair to the remainder of the substantial electrical contractors who are fulfilling all of their proper functions. It is one thing to help a contractor profound his functions, but it's another thing to do them for him, Mr. Clayton said.

Power wiring

L. C. Watson, manager of Distributor Sales, Allen-Bradley Co., Milwaukee, followed on the program with an address on "Adequate Power Wiring." He present-

Other members of panel, left to right: J. J. Perry, Sr., The Electric Supply Co., Atlanta; W. H. Butt, Butt's Electrical Supply Co., Charleston, S. C.; Ben S. Weil, Mayer Electric Supply Co., Birmingham, Ala.; Carl L. Teal, Knight Electric Company, Birmingham; and W. B. Gillespie, Henley and Gillespie, Bristol, Va. These panel members represented the wholesaling and contracting branches of the electrical industry.

at SEWA Annual Meeting

ed a series of slides, discussing them as he went along. He pointed out that the National Adequate Wiring Bureau had advantageously aimed its activity at the larger electrical modernization market, the home wiring market. But there also exists a tremendous potential in the promotion of adequate power wiring for industry and business establishments.

Mr. Watson brought out through his slides the elements that constitute an adequate power wiring installation. He took a simple motor circuit and described the various motor controls components recommended in the Code. He pointed out that most contractors would not feel that they could increase the bid on a job by including magnetic switches on all motors, but he told of one example where the wholesaler salesman had managed to get specifications changed so that magnetic switches were included in the specifications. The result was not only larger sales on one particular school job but eventually resulted in the installation of similar switches at other schools.

The various services available from the U. S. Department of Commerce field offices were described in detail by Merrill C. Lofton, manager of the Atlanta Field Office.

Mr. Lofton pointed out that the Department of Commerce is the businessman's representative in government, paralleling the Department of Agriculture for the farmers, and the Labor Department for the workingman. He reviewed some of the services and data which are available to business in their Commerce Department field offices, and directed their attention to the business and industry census which will be made this year for the first time in several years.

Seek profitable volume

"Let's Have a Good Piece of Pie," was the intriguing title of an address by A. H. Gudie, president, Trade Service Publications, Inc., Chicago. With the pie representing the total volume of available electrical business, Mr. Gudie drew the conclusion that the most desirable thing was not a big piece of pie but a *good* piece. That is, every branch of the industry needs not just volume but profitable volume.

Mr. Gudie presented a comprehensive analysis of the problems confronting the electrical industry at this time and discussed the responsibilities of the respective branches. He had some interesting comment on the changes that appear to be taking place in some phases of goods distribution in this country.

Problem of discounts

"The established method of distribution in the electrical industry is being seriously challenged," Mr. Gudie said. "In the sale of major consumer products the trend of selling direct from manufacturer to retailer is already quite well established. The discount house is changing the complexion of the retailer. Sales through home builders as installed appliances are becoming increasingly prevalent. The distribution of housewares, apparatus and supplies has not yet experienced a revolution to such an extent but the signs are here. The undercurrents can be felt and the rumblings of dissatisfaction can be heard.

"The number of wholesalers has multipled several times. Distribution centers are no longer confined

to the largest city within several hundred miles. Transportation is faster. Communication is almost no problem. There are more manufacturers; they make a wider variety of items; and they have established additional plants or warehouses in new areas.

Adjustment from wartime

"Contractors who expanded their organizations to handle million dollar wartime jobs are having difficulty getting their sights readjusted to the point that a thousand dollar job is worthwhile.

"All of these things are having their effect upon the way business is done.

"The problem for each of us is —what changes in the coming pattern of things will have an effect upon our particular niche in the business? What direction will it take? What should we do to get the most benefit out of the future demand for electrical goods and services?

"We frequently speak of the four channels of trade—manufacturer, wholesaler, retailer or contractor, and consumer.

Importance of middleman

"The first one creates a product for the last one. The two in between exist only because they facilitate the objectives of the other two—namely to help the manufacturer get his goods to the consumer and to help the consumer get the goods he wants. Both wholesaling and retailing branches of the industry are too prone to depreciate the importance of their functions.

"Manufacturers should not be blamed for seeking a selling method that will dispose of the greatest volume of their goods but they may be blamed for playing 'both ends against the middle.' On the other hand, wholesalers are derelict in protecting their position when they do not keep the manufacturer sold on the advantages of distribution through the wholesaler's channel. To do this, the wholesaler must perform —he must do a job. He must make those advantages so real that the manufacturers, retailers and society benefit from the fact that the merchandise does move through his link in the chain.

Don B. Clayton, left, of Birmingham, president of the National Electrical Contractors Assn. With him is B. F. Buchan, president of SEWA.

Availability

"There are some who question what value is added to the goods produced by the manufacturer when it goes through the wholesaler's hands. Something is definitely added. At least it is supposed to be. It is 'availability.' A device on the local wholesaler's shelf is certainly worth more to a consumer in that area than if it were upon the manufacturer's shelf a thousand miles away. That is the key to all of the wholesaler's functions.

"Wholesale distribution had its origin back in the days when transportation and communication were very much slower than at the present time. In order that the impatient demands of the consuming public be served it was necessary to establish stocks of goods in strategic locations because the ability to deliver is an important factor in determining who gets an order. Few, if any manufacturers

(*Continued on page* 101)

Among the featured speakers at the recent SEWA Industry Day Meeting were, left to right: A. H. Gudie, president, Trade Service Publications, Inc., Chicago; Merrill C. Lofton, manager, Atlanta Field Office, U. S. Department of Commerce; Joe B. Browder, manager, Commercial Sales Engineering Department, Georgia Power Co., Atlanta; Laurance C. Messick, manager, National Lighting Bureau, New York City; and L. C. Watson, manager of distributor sales, Allen-Bradley Co., Milwaukee.

Motor failures eliminated by keeping motors warm

Low voltage applied to motor windings when plant is down, keeps motors warm and prevents moisture condensation on windings

◆ TEMCO AIRCRAFT Corporation's large spar mill section in Dallas, is insuring itself against $2500 to $3500 annual loss in motor damage at a cost of only $400.

This saving is the result of an investigation that began when maintenance men noticed a relationship between spar mill downtime and spar mill motor failure.

When operation was more or less continuous, little maintenance was required on the 60-ft. spar mills. But when one or several of the company's eight mills shut down for a short time, trouble started.

Why motors failed

Maintenance electricians soon diagnosed the cause. When a motor stopped and its temperature dropped, moisture from the motor's water-cooling system condensed on the motor windings. This dampened the winding insulation, grounded the wiring and caused it to burn out.

Maintenance men estimated that condensation damage would claim about 10 to 12 motors a year, if it weren't controlled. Cost of rewinding a damaged motor ranged from $250 to $350.

Problem Analyzed

A drying device for spar mill motors would have to be automatic to be effective, electricians agreed.

Fans or blowers couldn't be used because windings on each spar mill's four Onsrud 50-hp motors were tightly sealed under double water-proof jackets.

Electricians tried baking spar mill motors in ovens. To determine which motors needed drying, electricians made "megger" checks on motor winding insulation. When a low megger reading indicated deteriorating insulation, they disassembled the motor and baked critical parts in an oven for 48 hours at 225 to 250° F.

This method dried out motor moisture, but it used up manhours, too. Two men needed a day and a half just to disassemble and reassemble a motor.

Automatic drying

Maintenance Foreman C. M. Turner, meantime decided the best way to dry out moist insulation was with a low voltage load. He set up a motor on a bench, placed a thermometer inside the motor where the motor leads enter, and experimented with several loads.

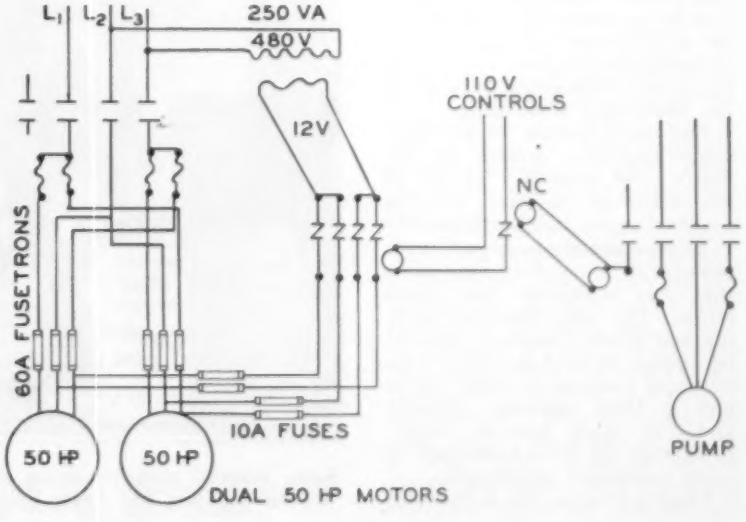
He found that 12 volts, using approximately 100 watts provided by a single phase transformer, maintained a temperature of about 110 degrees in the idle motor. This was just right—not too hot, but warm enough to discourage condensation.

Turner arranged for his low voltage transformer to be regulated by operation of the spar mill motor's coolant pump. The drying load is turned on, automatically, when the spar mill operator turns off the coolant pump. Stopping the pump opens a normally-closed relay which closes a size 1, four-pole

(*Continued on page* 104)

Moisture starts fires when it saturates insulation on motor windings and grounds wiring. Damage to this 50-hp Onsrud spar mill motor was caused by moisture condensation in windings. Repair cost $250 to $350.

Diagram shows low voltage hook-up to the motor leads. This system, conceived by Temco's maintenance foreman C. M. Turner, solved a troublesome maintenance problem.



Houston utility announces adequate wiring plan

◆ RECOGNIZING THE NEED for modern wiring in both new and existing homes as a requisite for a sound future in electrical appliance sales, Houston Lighting and Power Company has announced the "Reddy Wiring Program" for home builders, electrical contractors and architects interested in acquiring a fresh, positive selling point in house sales and home improvement.

Area appliance dealers and distributors will figure prominently in the promotion of the wiring program as well as in its results —the latter being in the amount of appliance sales increase effected by the program.

Objectives

The adequate wiring program has two objectives: The installation by merchant and individual home builders of wiring in new homes which will provide use of a full complement of electrical appliances, and modernization of wiring in existing homes to eliminate present unsatisfactory operation of appliances and to permit use of additional appliances. Both phases of the program will receive heavy and continuing support in the company's advertising.

Full participation of all electrical appliance dealers in this year's most important project of the electrical industry will be sought. Dealers may participate by (1) recommending to all purchasers of heavy-duty appliances that they modernize their home wiring; (2) using Houston Lighting and Power Company furnished display, printed and other promotional material in their stores and in their customer contacts, and (3) using drop-in "slugs" promoting the wiring program in their newspaper advertising.

Playing a major role in that part of the program directed to the new home construction field is Reddy Kilowatt, the animated symbol of electric service, who will actively assist home builders, designers and house salesmen in showing their prospective customers the unlimited benefits of homes designed for modern, electrical living.

Reddy Kilowatt signs of various sizes will be provided by the power company for use in adequately wired new homes. These signs will call the prospective buyer's attention to the adequacy of the home's wiring, and to the special circuits for heavy-duty appliances. This display material, along with general advertising support, will be provided home builders who meet the program's wiring requirements in their construction projects. Adequate Wiring Certificates, presented by the power company, will be available to participating builders for presentation to the buyers of their homes.

Minimum qualifications requirements in the new home phase of the program are as follows:

Minimum requirements

Meter loop (one-phase service): three No. 2 gauge conductors; service entrance equipment capacity: 100 amperes.

Lighting and appliance wiring: convenience outlets located so that no point along the floor in any usable wall space is more than eight feet from an outlet in that space.

Special circuits: necessary size wire and outlets to be installed to permit use of the following equipment:

Electric range, electric clothes washer and dryer, dishwasher and garbage disposal (in homes selling for $15,000 or more).

Two or more 230-volt a/c units unless central a/c unit is installed.

Modernization wiring

The program will devote equal if not greater attention to modernization of the wiring in existing homes. Wiring modernization, along with adequate wiring in new homes, will receive broad promotion in the company's newspaper, radio, television and other advertising. Themes of this advertising will include the need for and benefits of wiring modernization, the availability of loans—

(*Continued on page* 32)

Reddy Kilowatt adequate wiring signs have been used advantageously by Houston Lighting and Power Company in promoting its wiring program.

Automation through electronics

Part 4

by Robert J. Wilson, Sales Engineer
Photoswitch, Inc., Cambridge, Mass.

◆ MANY MANUFACTURERS who package liquids, powders and lightweight food products in containers of standard size or weight are increasing production speed and decreasing manufacturing costs by the use of electronic controls for the filling operations. The several ways in which electronic controls can be applied to automatic filling are: (1) precision filling through the use of extremely accurate electronic timing; (2) precision filling through the use of accurate electronic level controls; (3) automatic positioning of containers prior to filling with photoelectric control equipment.

Various applications of electronically controlled filling are described in the case studies which follow.

Electronic measuring

A manufacturer of high-speed filling machines was faced with a positioning and filling problem. Small containers or vials of valuable pharmaceuticals are filled simultaneously in batches of one to six vials. These are carried on a conveyor but, due to their small size and light weight, are not adaptable to control by mechanical switching methods requiring contact pressure. The problem was to accurately position a batch of vials for filling without upsetting them.

Photoelectric controls have been selected for the control system as these permit indexing without physically contacting the vials. Obstruction of the light beams by the vials stops them and starts the filling operation.

Two small photoelectric controls are placed along the back side of the conveyor. One photoelectric control is a high-speed type responding instantly to light beam interruption or completion. The second is a delayed action photoelectric timer which responds only after the light beam has been interrupted for a predetermined interval.

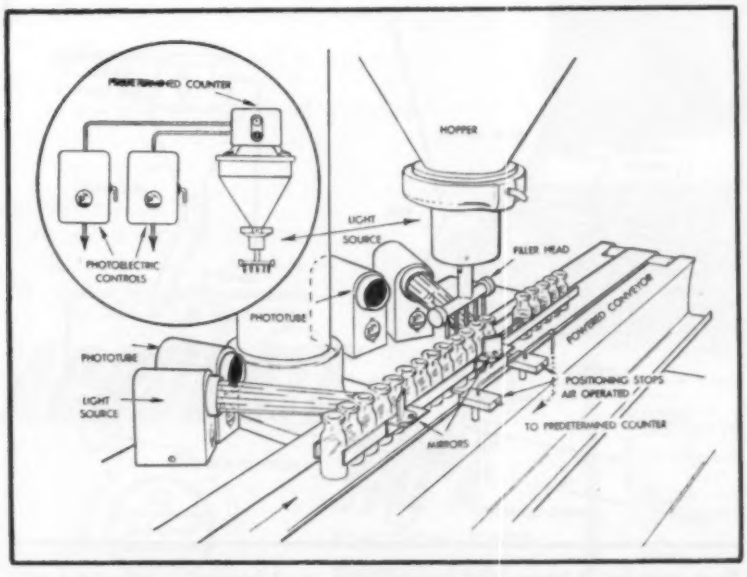
To minimize interference with the operator, each beam is reflected by a small mirror to its associated control. The conveyor is in continuous motion and two electropneumatic plungers control movement of the vials with reference to the conveyor. The right-hand one stops the line of empties in position for filling and the left-hand one holds back the empties behind the vials just filled until the conveyor has removed the filled vials. The high-speed photoelectric control beam is located at the right-hand stop, and the delay action beam at the left-hand stop.

When the first vial in the line of empties meets the right-hand stop and simultaneously breaks this beam, the photoelectric control starts a predetermined counter. This counter controls the number of revolutions of a rotating feed screw which measures out a specific quantity of material to the filling spouts at each revolution. After the prescribed number of revolutions, which varies according to the material and vial size, the predetermined counter stops the filling operation by disengaging the feed screw clutch. Simultaneously, the left-hand stop extends and the right-hand stop retracts, holding back the line of empty vials and allowing the continuously running conveyor to remove the filled vials.

The photoelectric control reverses the stop positions as soon as the filled vials pass out of the beam, allowing movement of empty vials into filling position against the right-hand stop. The filling cycle repeats when the leading empty vial again breaks the right-hand beam.

Wrong operation prevented

The second photoelectric control prevents the filling operation from starting in the event that a lapse in the vial supply has allowed too few empties to reach the filling position. This delayed type control responds only after its beam has been broken for a pre-set length of time. Thus, breaking of the right-hand beam starts the filling operation only when the left-hand



Automatic precision filling of small vials is accomplished successfully with photoelectric control in combination with feed screw counter.

beam has been continuously obstructed by the line of empties. Should a gap appear in this line, filling cannot start until the gap has been closed and there is a full line between the two photoelectric beams.

Filling with timer control

Many food processing, pharmaceutical, and chemical plants have improved the speed, uniformity, and flexibility of their automatic filling operations by substituting electronic timer control for more complicated volumetric and weighing methods. The extreme accuracy of high quality electronic timers under conditions of short interval repeat-cycle operation makes them the best method of filling control on any installation where the rate of flow or pressure is constant. Furthermore, changing from a filling operation on one size container to another size involves merely a new setting on the timer dial. Conventional filling systems require that the machine be set up to accommodate a particular container.

On most installations, the electronic timer actuates a solenoid valve whenever a bottle is shifted into the filling position. The timer will maintain the solenoid valve energized for the exact length of time that is necessary to bring the liquid to the desired height in the container.

A recent packaging technique in the food industry involves filling cellophane and tissue paper bags with light, bulky products such as potato chips. Automatic filling machines are designed to handle this filling operation and these machines require dependable and accurate timing devices to control solenoid valves since the material is moved by air jets.

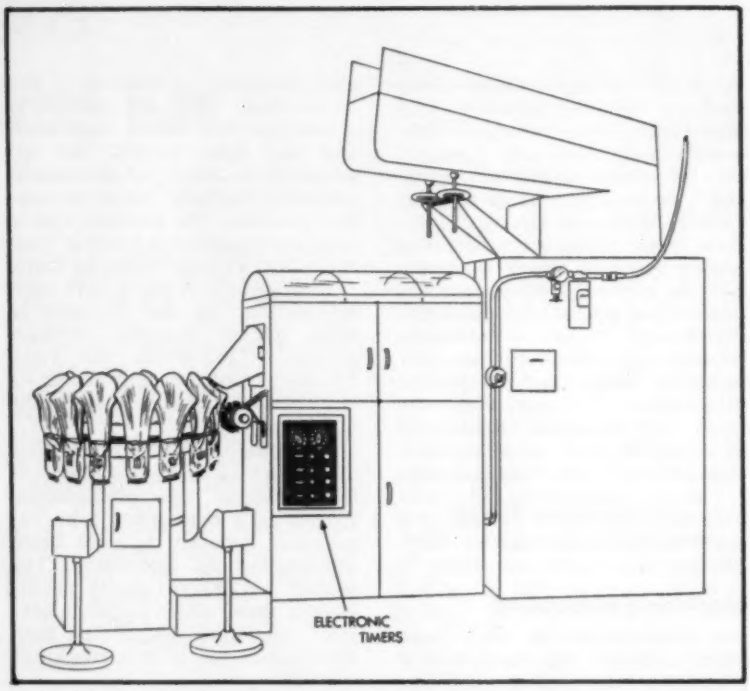
Several manufacturers of such automatic filling machines solve the timing problem by the use of electronic timers. Two timers are used: the first timer times the operation of an indexing head which places paper or cellophane bags in position to be filled; the second timer operates a solenoid valve which controls a blast of air blowing the food products into the bag.

By using electronic timers, the maximum speed of production is obtained and, because of ease of timer adjustment, flexibility of application to different size containers is provided.

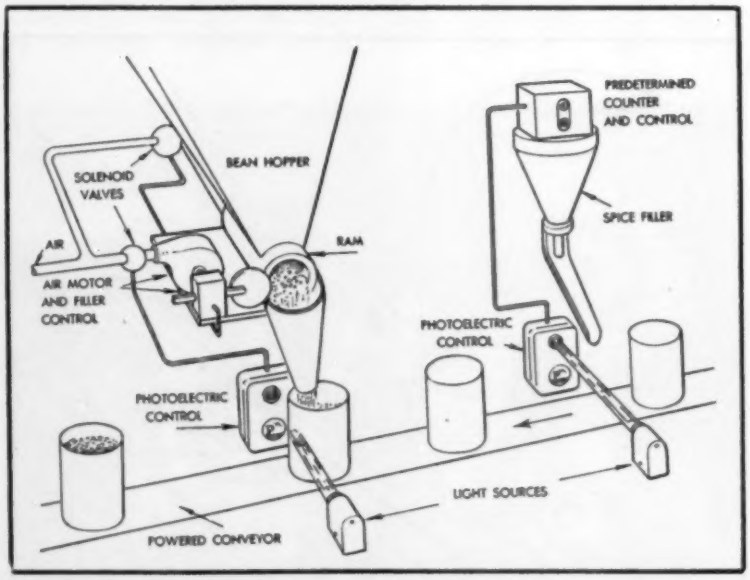
Similar timing controls have been applied to filling machines in the beverage, dairy, and chemical industries.

Small batch process control

True New England-style baked beans must be brick-oven baked in small pots to preserve their traditional flavor. Mass production of this type of baked beans requires a maximum of automatic control to insure high volume



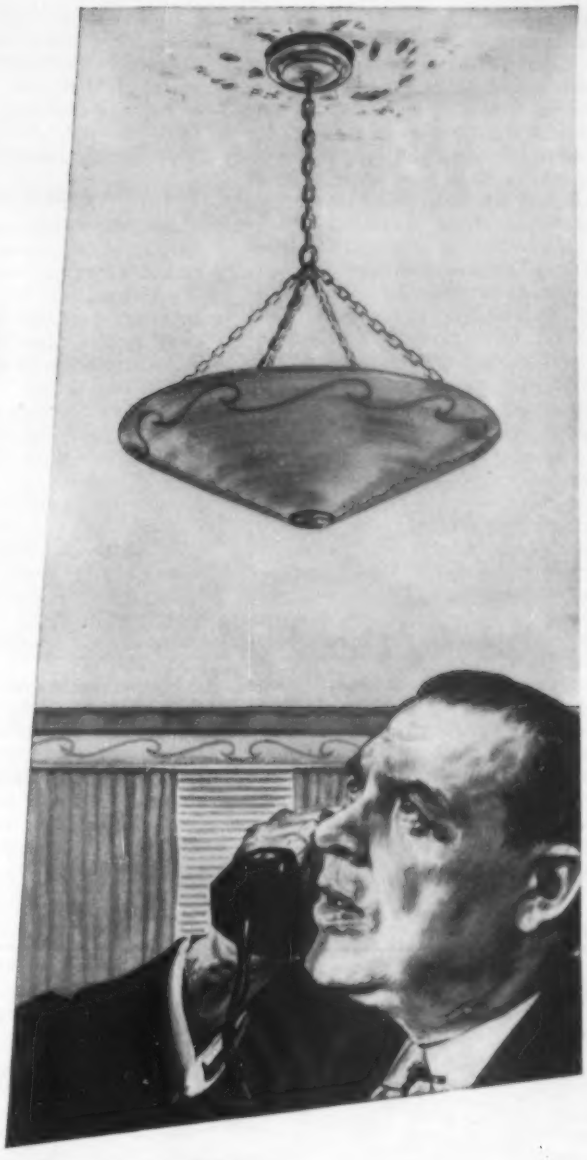
An electronic timer successfully controls filling operations where rate of flow of product is constant. Potato chip filling job is shown here.



Brick oven baked beans must be cooked in small batches to preserve traditional flavor. Electronic control gives high volume production efficiency to small batch process technique. Spice and bean control are shown.

10 SECONDS

COULD HAVE SAVED A $50,000 CUSTOMER



The job was perfect, but when freshly painted ceilings were smudged and smeared, the contractor lost the customer. Sticky, messy tape was the cause . . . it stuck to fingers and fingers touched the ceiling.

Ten seconds of time could have saved this customer, because in just *10 seconds* you can learn about a tape that sticks where it is supposed to and will not smudge off on hands.

Send today for your ACCURATE 10 SECOND TEST KIT . . . no claims, no hearsay . . . the proof is in the product for you to see.

ACCURATE TAPE

ONE PLANT . . . ONE PRODUCT — amc — ELECTRICAL TAPE

FRICTION TAPE
RUBBER TAPE
PLASTIC TAPE

ACCURATE MFG. CO.
50 Hepworth Place, Garfield, New Jersey

Please send me, without obligation, an ACCURATE 10 SECOND TEST KIT.

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production efficiency with small-batch process technique.

Lightweight aluminum baking pots travel to the ovens on relatively high-speed conveyors and receive charges of spices and dry beans at separate filling points. It was necessary to devise a reliable and precise means of starting each pot-filling operation.

Photoelectric controls at each filling point solved the problem. Interruption of the photelectric control beam by the pots starts each filling operation with unfailing accuracy and no breakdowns.

When the control beam is broken by a pot, the photoelectric relay initiates the spice-filling operation. A worm-type filler measures out an exact amount of spice mixture which travels by gravity down an inclined chute into the pot. The photoelectric relay for bean-filling operates a motor which opens a port, controls a measuring ram, and allows a measured quantity of beans to fall into the pot. Motor switches then cause the ram to retract and move another charge of beans into position for the next pot. The control circuit is designed so that the machine prepares itself for the next filling cycle immediately upon completion of the ram's "out" stroke.

With the new control system, the pot-handling problem has been considerably simplified. No special arrangements are required to keep the pots in a straight line. Furthermore, dented pots can be used along with normal pots because dents do not interfere with the photoelectric operation.

Weighing and boxing tacks

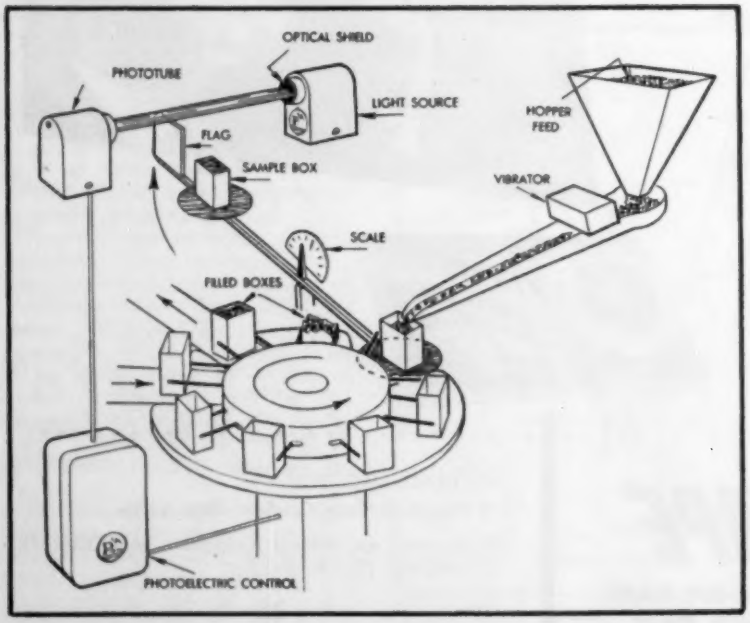
A hardware manufacturer sought an automatic means of packaging carpet tacks in exact quantities. The control must fill each box with an exact quantity of tacks. When each box is filled, it must automatically index an empty box into the "fill" position.

In the former process, a feeder vibrated the tacks through a chute and into a box on a small balance. When the scale indicated that the proper weight of tacks was in the box, an operator closed a switch that lifted the filled box off the scale and replaced it with an empty one. However, high labor costs and competitive conditions called for an increase in production rate.

Photoelectric control has solved this problem. Interruption of its weightless control beam by the scale pointer constitutes no undesirable scale loading. The photoelectric control is mounted at the rear of the scale. The light beam is restricted to very small dimensions by an optical slit positioned so that it is interrupted by a balanced cantilever arm attached to the scale when the proper box weight is reached.

Operation of the photoelectric control then stops the flow of tacks by de-energizing the electric feeder. Simultaneously, the indexing mechanism removes the filled box and replaces it with an empty one. Completion of the indexing motion reinstates the cycle and starts the flow of tacks into the empty box.

So accurate is this automatic photoelectric control system that a check of several hundred boxes revealed a total overage of only one tack. In addition to the reduction in labor costs, an appreciable saving was also realized by preventing overages.



A delicate balance scale for checking the filled boxes against a standard box controls filling operation without introducing extra scale loading.

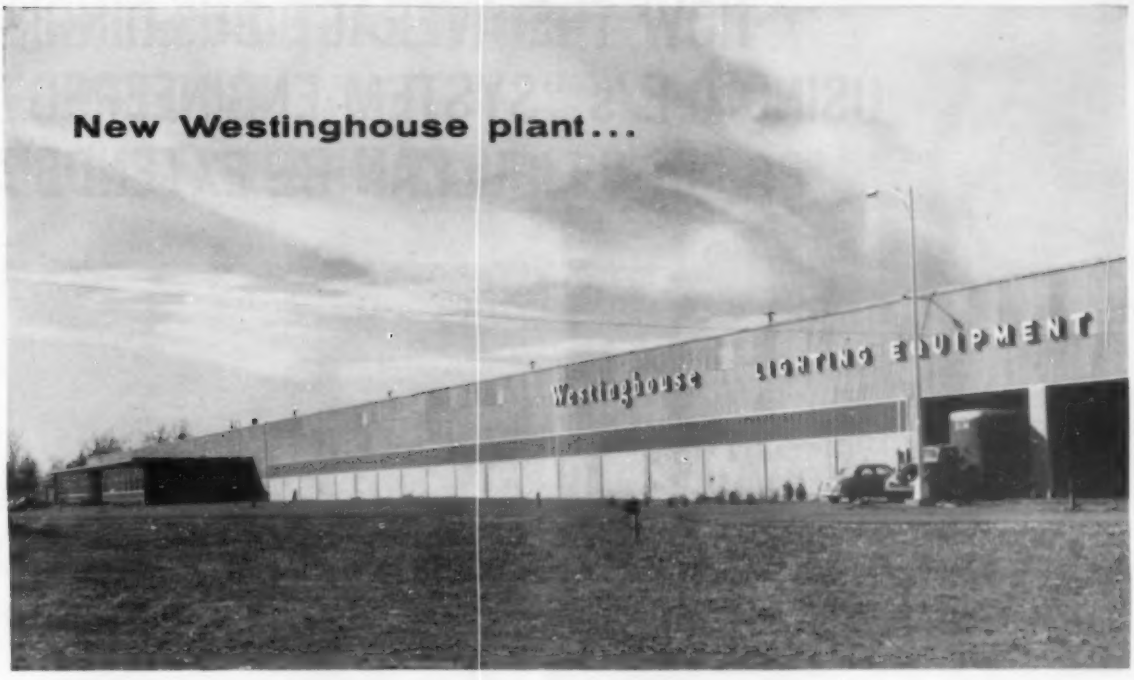
Houston wiring program

(*Continued from page* 28)

Title I, FHA, and others—for financing of rewiring, and the offering of wiring design and advisory service by power company personnel.

The part played by area appliance dealers in the wiring program will be a determining factor in the success of the electrical appliance business in 1955. Exemplary success has been evidenced in other areas of the United States where wiring modernization efforts on the part of the electrical industry have obliterated the hypothetical "saturation point" and have boosted appliance sales.

The wiring program initiated by Houston Lighting and Power this year already has received favorable response from a number of prominent home builders. That portion of the program pertaining to new home construction is intended to improve the standards of wiring, and hence the standard of living, in homes being built by merchant builders, by showing them how they will profit (along with the home buyers) when modern wiring is installed in their new houses. While foresighted home builders may appreciate the business potential of this year's wiring program, it will be up to the appliance dealers to help inform and enlighten customers on the advantages of adequate wiring to the point where they will insist upon inclusion of adequate wiring in the homes they buy or in their plans for modernization of their present homes.



produces over one mile of modern fluorescent fixtures—daily

Every day, in this modern multimillion-dollar plant in Vicksburg, Mississippi, Westinghouse produces *over one mile* of fluorescent luminaires for the expanding lighting market. Westinghouse engineers design units incorporating all the elements of easy installation and maintenance simplicity—so important to the electrical contractor. Thanks to high-quality standards these luminaires will perform effectively for years.

For example, Elm Hill school officials selected Westinghouse LC luminaires for their architectural distinctiveness, graceful beauty and comfortable glareless illumination. More facts? See The Man With The Facts, your local Westinghouse distributor. For informative literature about the new Westinghouse LC luminaire fill in this coupon.

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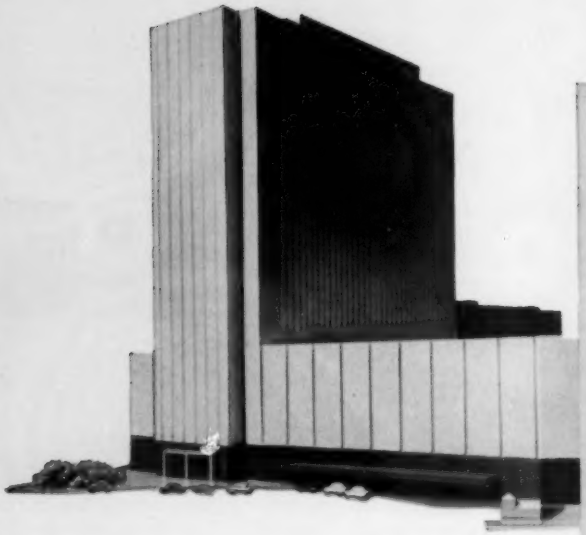
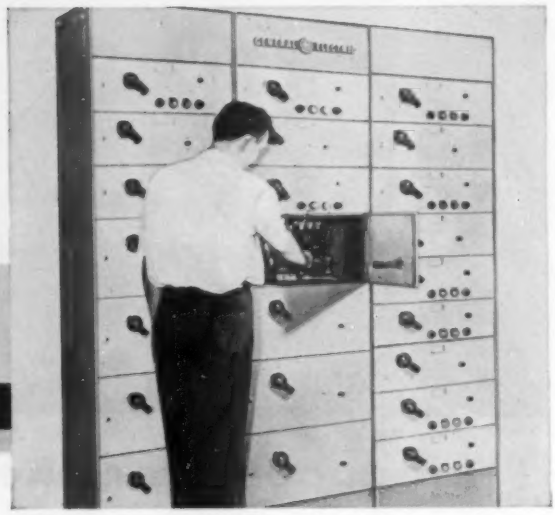


Artist's concept of the fabulous new Coliseum now under construction at Columbus Circle, New York City. More than *2 miles* of General Electric's low-voltage-drop Type LVD busways will go into this unique building—one of the first and by far largest higher voltage 480Y/277 (460Y/265)-volt electrical distribution systems ever installed. The variety and flexibility of G-E equipment enable General Electric engineers to give important assistance to consulting engineers, architects and contractors in their planning of a complete system.



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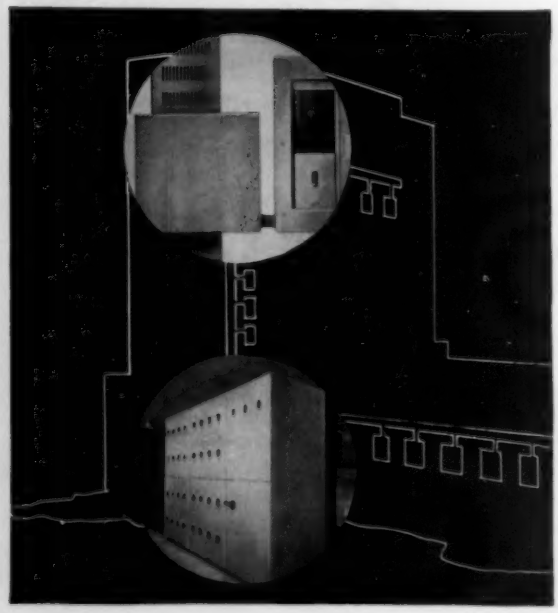

NEW YORK COLISEUM
CONSTRUCTED BY TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY
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ARCHITECTS—LEON AND LIONEL LEVY
MECHANICAL AND ELECTRICAL ENGINEER—GUY B. PANERO
ADVISORY ARCHITECTURAL COMMITTEE—AYMER EMBURY II, EGGERS & HIGGINS, JOHN B. PETERKIN
GENERAL CONTRACTORS—WALSH-FULLER-SLATTERY (JOINT VENTURE)
ELECTRICAL CONTRACTORS—T. FREDERICK JACKSON AND J. LIVINGSTON CO. (JOINT VENTURE)

Cutaway diagram shows tap-offs on risers at each floor of building. Their planned-in-advance accessibility assures flexibility to meet increasing future needs.

• • •

General Electric "System Engineered" equipment provides maximum safety, ease of relocating equipment, reserve power capacity for your future needs. For further details please contact your nearest General Electric Apparatus Sales or Assemblies and Components Sales representative. Or write—GENERAL ELECTRIC COMPANY, DISTRIBUTION ASSEMBLIES DEPARTMENT, PLAINVILLE, CONN.

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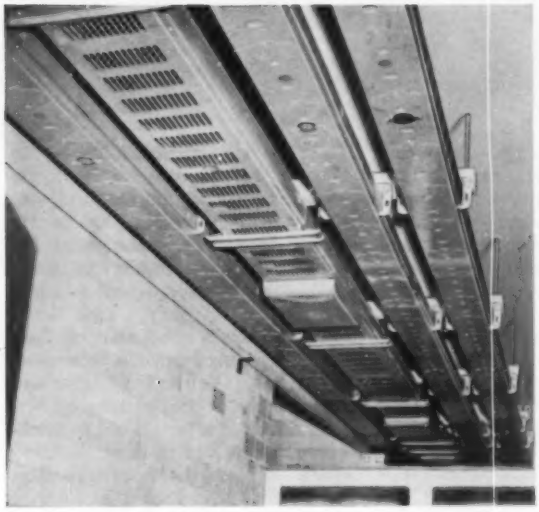
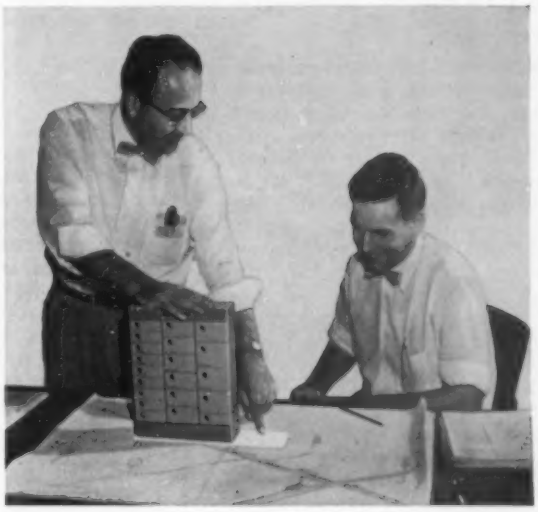
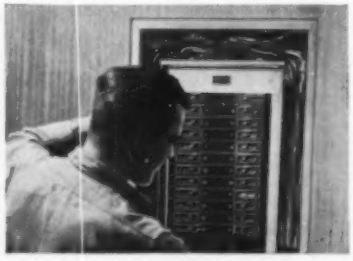


G-E "System Engineered" Equipment is reverse of hodge-podge products using non-integrated parts. (3) Standardized parts throughout G-E System make faster, less costly extension or alteration possible. (4) Since components—control centers, busways, switchboards, panelboards, sectional distribution centers—are engineered to work together, your G-E System *must* give most efficient service and reduced maintenance costs. (G-E Flex-a-Power* busways, above, allow *complete* relocation of loads without rewiring.)



One source of supply is another important cost-reducing factor in G-E "System Engineered" Equipment. (5) Naturally, it simplifies your job because you deal with only one man, the skilled General Electric engineer. He works with consulting engineers, architects and owners from the planning stage to completion of building. He helps them save many hours and dollars. (6) Most important, your G-E man is not selling just products. He is providing G-E "System Engineered" equipment that is designed with a long *built-in* future.

Switchboards — For reliable control, distribution and circuit protection. Completely wired at the factory. Large air or molded-case circuit breakers, fusible switch units, meters, instruments and accessories already installed.



Panelboards—Types NAB, NHB, NLAB, NLTQ, NLTQX, NTP, NTC for lighting—types NCB, CCB, Swing-WA* and Converti-Fuse* for power distribution. Complete line. Factory-assembled for fast, compact installation.

Sectional Distribution Centers —Factory-assembled to reduce installation cost. Short secondary feeders in load-center system mean less voltage drop—rarely more than 2 to 3%. Easy-to-order arrangements eliminate tedious detailing.

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Distribution substations

Part II

◆ SELECTION of the most economical substation size is a complex subject and depends upon many factors which vary between utilities, and even within a utility. Therefore, no generalized statements can be made as to what one substation size should be adopted as standard. Fortunately, however, there are guide posts which a utility can use to analyze its own system to determine the most economical building block sizes for its own peculiar set of conditions.

Some of the factors which should be considered include:

What subtransmission and primary voltages have been adopted as standard?

Is construction overhead or underground? If overhead, is open wire construction or aerial cable to be used?

What is the load density of the area to be served?

How fast is load expected to grow?

What is the geographical configuration of the load area?

Are the substation sites readily available, or are they difficult and expensive to purchase?

How much voltage drop is to be permitted in the load area?

What provisions are required to maintain adequate service continuity?

An examination of these factors to determine their influence on substation size will follow.

Size and load density

For any given combination of primary conductor sizes, primary voltage, allowable primary voltage drop, load density, power factor, number of feeders, and geographical configuration, there is a load area of such size that it can be served from one feed point without resorting to use of express feeders.[3,4] This will be termed the basic load area. For example, consider the theoretical square load area of Fig. 1. Load is fed to the area from the feed point (indicated by FP), through four primary mains, Each main serves a triangular shaped area such as that denoted by points ABC. If the area has No. 4/0 mains and No. 4 laterals, then the load that can be carried and area served will follow the curves of Fig. 2, when plotted as functions of load density.

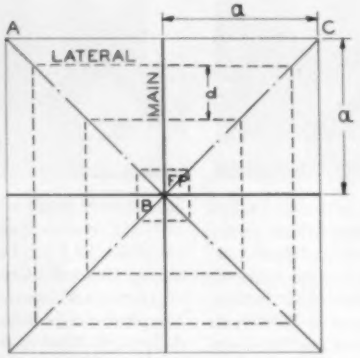

Fig. 1—Assumed theoretical square load area used to illustrate determination of economical substation.

These curves are based on 3.5% voltage drop between the feed point and the end of the last laterals, 4.16 kv primaries and 95% power factor. It is assumed that laterals are spaced 480 feet apart. It should be noted from Fig 2 that basic load area kva increases slowly with increasing load density. Area served decreases rapidly with increasing density. Thus, if a building block substation is loaded at each feed point, the result will be small substations, generally 5000 kva and below.

The curves of Fig. 2 apply to only one combination of conductor sizes, power factor, and voltage

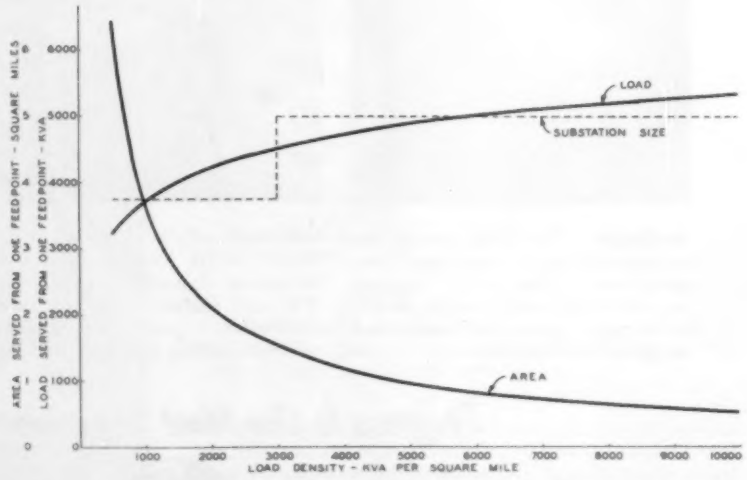

Fig. 2—Load area and substation size for theoretical square load area of Fig. 1 when area is limited by 3.5 per cent maximum voltage drop and conductors are No. 4/0 mains, No. 4 laterals, d=480 Ft.

[3]References will be found at the end of this article on page xx.

in system planning

by H. M. Bankus

Electric Utility Engineering Section
General Electric Company

drop. Obviously, larger conductor sizes, or greater voltage drop in the load area will mean greater kva in the basic load area. The reverse is also true. Fig. 3 indicates the difference these changes might make in basic load area kva. It is significant that substation size would continue to be small if one substation were provided for each basic load area.

As load in an area grows, moderate increase in substation size can be expected. Once a standard size has been adopted, it should be sastisfactory for a long period of time, however. For the conditions of Fig. 2, a 3750 kva substation would adequately serve the load at load densities between 500 and 3000 kva per square mile. For a load density of approximately 3000 kva per square mile, a 5000 kva basic size would be more appropriate, but this would continue to be adequate through 10,000 kva per square mile.

With increasing load the area will continue to be sub-divided by inserting additional standard basic substations between those already installed.

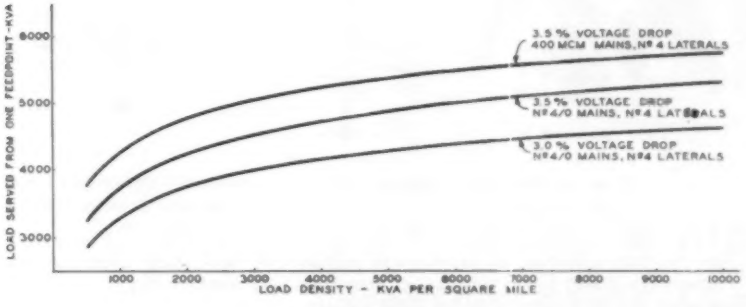

Fig. 3—Effect on load per basic load area of varying conductor size and varying voltage drop between feedpoint and end of last lateral.

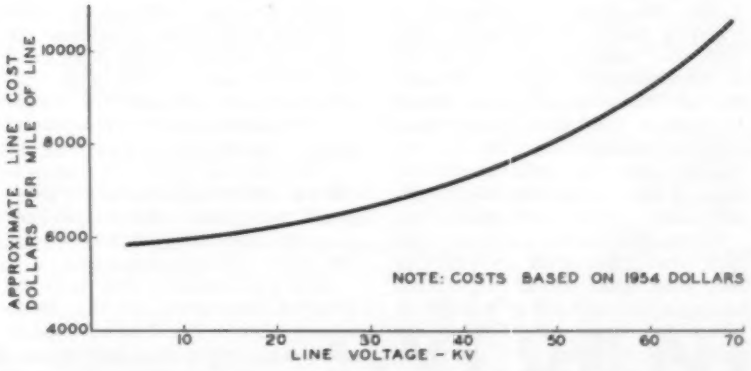

Fig. 4—Effect of voltage on line construction costs, based on No. 1/0 conductor.

Size and line cost

The assumption thus far has been that one building block substation would be provided per basic load area. Actually, it may sometimes be more economical to combine two or more basic load areas and serve them from a single substation. To do this, it is necessary to provide express feeders from the substation to the feed point, but subtransmission distances will be reduced. Also, larger substations, often costing less per kva, will be utilized.

The economical number of basic load areas to be fed from a single substation, whether this number is 1, 2, or 10 is dependent upon the relationship of high voltage to low voltage line cost including losses.[5] In general, if the ratio of subtransmission line cost to express feeder line cost is high, large substations will be justified to reduce substransmission line mileage. If this ratio is low, smaller substations become more economical. Since line construction costs increase with voltage in a manner similar to the curve of Fig. 4, a high subtransmission voltage will generally favor a larger substation, whereas if the subtransmission voltage is low, smaller substations will be favored.

The terms large and small when describing substation size refer to the number of feeders and not necessarily the KVA. For example, a 15,000 kva unit would be a large substation at 4 kv but would be a small substation at 12 kv. In general, small substations have less than six feeders, whereas large substations have six or more, regardless of the primary voltage or substation kva.

Rate of capitalization of line losses is also a factor affecting substation size. A high capitaliza-

tion figure increases the over-all cost of low voltage construction more than that of high voltage construction. Thus, the ratio of high to low is decreased, favoring smaller substations.

The cost of low voltage line losses becomes a substantial item of total system cost when substation size is large. Failing to properly evaluate these losses when comparing substation sizes gives an inaccurate cost picture which can lead to an unsound solution.

Underground construction is far more expensive than overhead construction.[6] Therefore, if either high voltage or low voltage line construction is underground, the ratio of the line costs will be quite different than if both are overhead, and optimum substation size will then be different. Underground subtransmission with overhead primary feeders would dictate large substations. Overhead subtransmission with underground primary feeders favor smaller substations. If both are underground, economics would still dictate small substations because of the greater mileage normally required in low voltage lines.

Best substation size

The optimum substation size from the standpoint of high voltage and low voltage line construction cost is that one which gives lowest combined cost of the substation, subtransmission, and express feeder line cost including losses of all three items. The optimum size as thus determined will vary with utilities, and depend upon the voltage, type and cost of construction, and rate of capitalization of losses. A sample comparison is shown in Fig. 5. In each of the three cases shown a block consisting of four basic load areas is taken as a unit with either 1, 2, or 4 substations feeding the block. Assumed substation location, arrangement of subtransmission lines and primary express feeders for each case are given by the block diagrams at the base of Fig. 5.

In each case radial substations supplied by multiple subtransmission has been assumed. Load per basic load area and substation size required to serve this load is in accordance with the curve of Fig. 2. Primary distribution voltage is 4.16 kv. Losses are capitalized at $200 per kilowatt for load losses and $350 for no load losses.

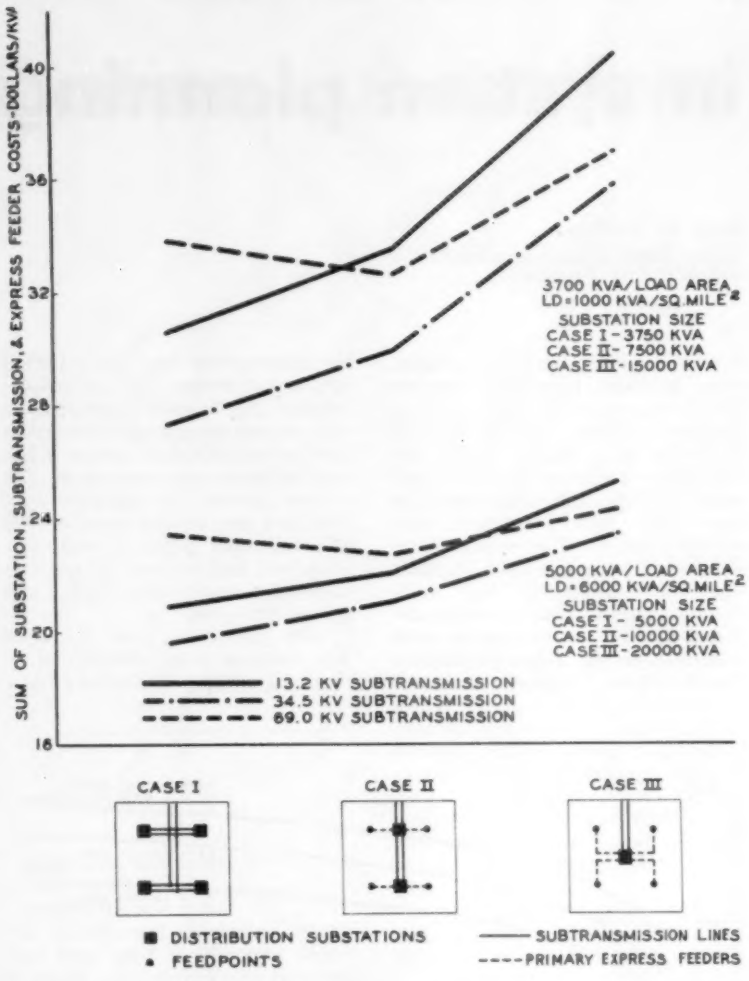

Fig. 5—Determination of economical number of basic load areas served from one building block substation, based on load area of Fig. 1 and load curve of Fig. 2. Costs based on 1954 dollars.

Under the conditions assumed, a building block substation serving just one basic load area would prove most economical at 13.2 and 34.5 kv. Thus substation size would be 3750 or 5000 kva. If subtransmission voltage were 69 kv, the higher cost of subtransmission lines at this voltage makes a larger substation more economical.

When the circuit constants are such that basic load area kva is less than that assumed in this example, the economical number of basic load areas served from one substation will be more than one for 13.2 and 34.5 kv as well as for 69 kv. In general, economical substation size will range from 2500 to 10,000 kva for multi-feeder substations with 4 kv primaries, the exact value depending upon circuit constants, load density, and subtransmission voltage. For single feeder substations, most economical size will generally range from 1000 to 2000 kva. At 12 kv, the economical size will be approximately three times the values listed above. Economical size will vary accordingly for other primary voltages.

It is significant to note that the relative economics of the three cases shown in Fig. 5 do not change appreciably with load density. Increasing load density will cause the economical substation size to increase, but the increase will be

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slow and will follow the curve of Fig. 2.

Variation from minimum to maximum cost of serving a load area, both on a dollar per kva basis and as a per cent of minimum cost, is greatest at light load densities. But this does not decrease the importance of correctly selecting the most economical substation sizes at higher load densities. If anything, economical selection of substation size is more important at higher densities because the total dollars involved are much greater.

Although the determination of most economical subtransmission voltages is beyond the scope of this paper, it is an interesting sidelight on Fig. 5 that 34.5 kv subtransmission was consistently less expensive than either of the other two voltages considered. This results from the fact that the voltage penalty for 34.5 kv line construction is not appreciably higher than at the lower voltages, but subtransmission losses are considerably lower. A different primary voltage might change this subtransmission economic comparison. Generally subtransmission voltage is predetermined by past decisions and existing construction. However, if a utility is in a position to make fundamental decisions of this sort, a review of the subtransmission voltages used would be a useful companion study to selection of substation size.

Size and load growth

Rate of increase of load in an area is a factor affecting selection of substation sizes to serve that area. Small substations generally cost more in dollars per kva than large substations, but their use will allow substation capacity to closely follow the system load growth curve. Thus by deferring system investment they may prove more economical than larger substations which have a lower cost per kva.

In selecting a substation to serve a growing area, some provision for load growth should be made. It is not economical to install a substation that will be overloaded within a few months after installation, when a larger size would have cost less than the two smaller units now required. On the other hand, it is not economical to wait too many years for load to catch up to substation rating. The money invested in the larger unit can be better invested in equipment actually bringing a return.

Determination of the most economical size from the load growth standpoint depends upon anticipated rate of load growth, upon the required rate of return on the investment, upon the period of time considered significant in making comparisons, and upon the relative equipment investment costs for the various systems.

An example will help to illustrate the effect of load growth on substation size. Assume an area with an initial load of 3750 kva, and a 3% annual rate of load growth. Further assume that the substation selected to serve this area will be either a 3750, or a 7500 kva unit. With either size, subtransmission voltage is 34.5 kv and primary distribution voltage is 4.16 kv. Daily load factor is such that a maximum transformer overload of 20% above peak rated kva is permitted.

The following annual charges are assumed: depreciation, 2.7% of investment costs; income taxes, 3.8% of investment costs; other taxes, 2.7% of investment costs; and cost of capital, 6.0% of investment costs. Total annual carrying charges, 15.2% of investment costs.

By performing the steps outlined above to obtain an economic comparison of the 3750 and 7500 kva sizes by the present worth method, the following result is obtained:

Estimated substation investment cost in dollars per kva:

3750 kva substation	7500 kva substation
$17.30	$13.90

Sum of the present worths of total annual charges after years shown:*

Years	3750 kva	7500 kva
10	$109,120	$127,230
20	199,210	199,920
30	251,360	242,140

***Based upon an initial load of 3750 kva and 3% annual load growth.**

The effect of the length of time over which comparisons are made is evident from the above tabulation. After only 10 years time, the 3750 kva unit clearly represents the lower cost. As load grows and the 7500 kva unit becomes loaded to capacity, it becomes more economical. After 20 years the 3750 and 7500 kva sizes are roughly equivalent, while over a 30-year period the 7500 kva unit becomes most economical.

If load grows faster than the 3% annual rate assumed, the lower dollars per kva cost of the 7500 kva substation will counterbalance its higher initial cost even sooner. At the same time, it should be borne in mind that conditions may change, and estimates of load growth too far in the future may not materialize. Therefore, it may not be wise economy to wait too long for a larger kva size to prove most economical.

Effect of load growth rate

An indication of the effect that various rates of load growth will have on economical substation size, both over the long and short range, is shown by the bar graphs of Fig. 6. In this chart, the sum of the present worth of the annual costs are shown as 100% in each case for the 3750 kva size. When load increases at an annual rate of 5%, the 7500 kva substation is more economical than either the 3750 or 15,000 kva sizes regardless of whether comparison is made over a 10-year or a 30-year period. The 7500 kva unit is still most economical of the three when annual rate of load growth is 10%. At the very rapid rate of 20% increase per year, the 15,000 kva size actually becomes the most economical size over the long range.

It is significant to note from Fig. 6 that the 7500 kva unit was either the most economical size of the three compared or nearly so for both the long and short range periods over a very wide range of load growth condition. This indicates that once a study has been made for a particular system, and a standard substation size selected, maximum economy may not be sacrificed by continuing to use this standard size even though the load growth fails to follow exactly the pattern assumed when the study was made. Obviously, however, a radical change in the original assumptions should be accompanied by a review of the standards which were selected based on those assumptions.

Size and geography

The theoretical square load area of Fig. 1 with uniform load density is very useful for comparing various types of systems where it is desirable to maintain constant

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The Harmelink Bros. use FASCO Ventilating Fans in kitchen and bath in their new homes in Denver, Colorado. The brick home pictured above, which attracted considerable interest during National Home Week in Denver, is representative of the high quality stressed by Harmelink Bros.

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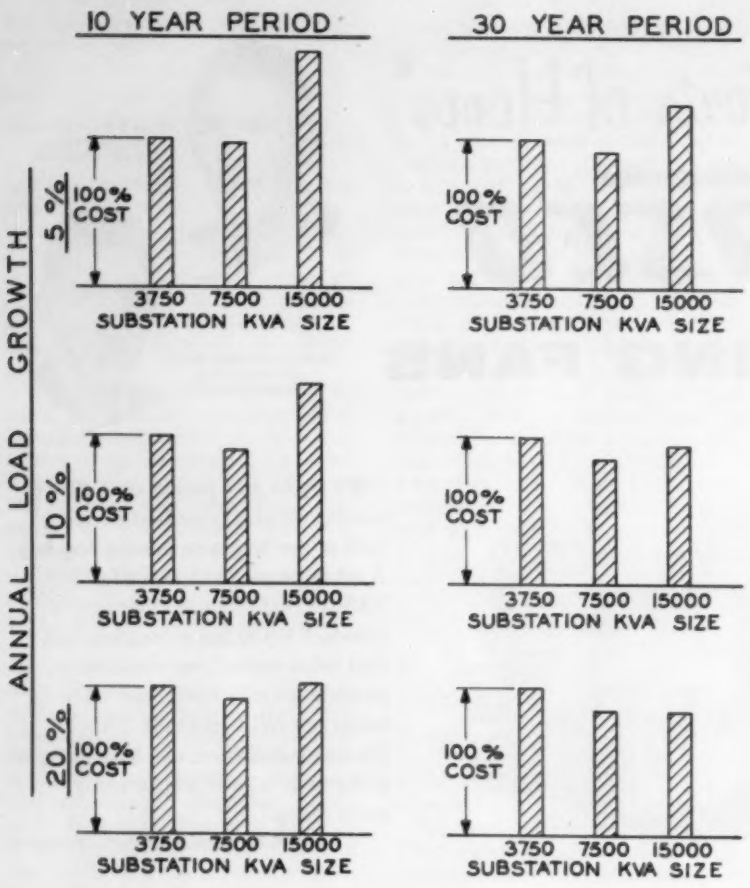

Fig. 6—Comparison of substation investment costs using present worth method for 3750, 7500, and 15000 kva, 34.5 kv to 4.16 kv radial type, bus regulated substations.

as many factors as possible. In practice, load densities are not constant over an area, and it is seldom possible to serve from one feed point an area that forms a perfect square. For example, the theoretical load area does not take into consideration areas with relatively high concentration of load such as suburban shopping centers within a light load density area. Neither does it consider the location of parks, cemeteries, rivers and lakes. Often the geographical configuration of an area is such that an area best served from a single substation is long and narrow instead of square.

Fortunately, these local variations need not mean a departure from standard substation sizes and types. Instead it usually means an adaptation of load area size and shape, and the number of feeders serving the area to the predetermined substation size. Fig. 2 has already shown that a wide variation in load density will not appreciably change substation size, but that area served from one substation changes radically. This will be equally true for variable load densities within an area, and for variation in geographical configuration.

Of more importance in determining substation size is the availability, or lack of it, of suitable substation sites. Depending upon the location of a substation, the site can be a major part of the total cost or an insignificant part. If the only available sites are very expensive, economics will dictate the substation sizes be large to spread the cost over as much kva as possible. If suitable sites are a small part of the total cost, substations size will be determined by other factors.

Occasionally substation sites are not overly expensive, but because of zoning and other restrictions they are difficult to obtain. This may mean that sizes will be large despite the fact that economics favor smaller substations.

Where for reasons of site costs or zoning regulations, substations must be large, standard size units can still be used. Assume for example that a 3750 kva substation with three feeder breakers has been adopted as standard for a system. If 15,000 kva of load must be served from one location, the substation designed to serve this load can be built up of four standard 3750 kva building blocks. A substation can "grow" on its site as load grows by addition of these standard building blocks when it becomes more economical to utilize existing sites than to obtain new ones at intermediate locations.

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This is the second in a series of four articles on the subject of distribution substations. Copies of the first article of the series are available upon request. The third article of the series will appear next month.

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Building a line over marshland

Construction of a 7,200-volt distribution line to serve Patterson Island, near Valona, Ga., over a mile of marshy land involved unusual problems for Georgia Power Company engineers. One part of their solution was to position poles and materials with boats during high tide.

by W. E. Powell
Brunswick District Superintendent
Georgia Power Company

◆ CONSTRUCTION was completed recently on an overhead 7,200-volt distribution line to serve Patterson Island, located near Valona, Georgia. This island is separated from the mainland by a little over a mile (5,390 feet) of marsh and a small river about 400 feet wide in addition to several tidal creeks varying in width from three to 25 feet. About 600 feet of line was required on the island itself. Patterson Island can be reached only by means of boats.

The engineering on this job was done by Guy W. Brown, Brunswick District engineer, and called for the use of 20 structures to support the conductors. Due to the soft and treacherous marsh, ankle-deep everywhere and waist-deep in many places, it was decided to make every third structure an A-frame.

This was constructed by setting a 30-foot pole in the mud vertically with a 22-foot pole bolted on at the ground line. An 18-foot pole was bolted to each end of the 22-foot pole and laid up against the vertical 30-foot pole and bolted, forming a capital A with a vertical line through it.

Anchoring poles

These structures were then guyed at right angles to these leaning poles with guy-wires attached to large 22-foot mud anchors screwed into the marsh with two-inch pipe.

All other poles were equipped with mud sills formed by bolting two double 4" x 6" x 8' cross-arms at right angles to each other to the poles at the ground line and spiking 2" x 10" x 4' timbers on each end of the arms.

Engineering completed, the big question became how would this large amount of heavy material be spotted at each pole location. Since the A-frame entered into

(*Continued on page 104*)

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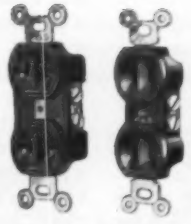
P&S 1570 (brown) and P&S 1570-I (ivory) — Parallel slot type, double grip contacts.



P&S 1530 P&S 1570

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Notes on new utility equipment

High accuracy with stability of performance over a wide range in testing portable standard watthour meters is possible with the Type RST-2 Knopp Unload Rotating Standard Testing Equipment, according to the manufacturer, Electrical Facilities, Inc., 4234 Holden Street, Oakland 8, Calif. These test benches are designed to provide test voltages of 120, 240 and 480, as well as special voltages that may be specified. Current ranges are .25 to 100 amperes at power factors from unity to 30%.

The General Electric Company has announced a complete new line of FM mobile and base station two-way radio communication equipment for both 25-54 megacycle and 144-174 megacycle land-mobile radio services. Featuring the use of plug-in chassis, the new line is designed around 12 basic "building blocks" consisting of two receiver, four transmitter, and six power supply chassis. This flexibility makes it possible to assemble 60 different mobile two-way radios from standard units. Additional information is available from General Electric Company, Electronics Park, Syracuse, N. Y.

A new massive aluminum "T"-shaped universal compression tap connector has been developed for overhead service connections by Burndy Engineering Co., Inc., Norwalk, Conn. The connectors are suitable for secondary to service drops, primary to transformer leads, or transformer leads to secondary. The tap connector has a "C"-shaped run element and tubular tap element, and takes a wide range of copper, aluminum, and ASCR conductors from No. 4 through 400 Mcm. The construction prevents joint deterioration from galvanic action and assures a stable, high-conductivity joint under all load conditions.

A completely new line of high voltage bushings complying with ASA Standards has been announced by Ohio Brass Co., Mansfield, Ohio. This new standardization reduces bushing variety to a relatively small number of separate designs and provides for inter-changeability at the various voltage levels. First group of O-B bushings to be made available corresponds to the standard voltage ratings of 23, 34.5, 46, and 69 kv. The line is to be expanded to meet all requirements.

A completely new pole rack design for distribution-type power-factor capacitors is now available from Cornell-Dubilier Electric Corp., South Plainfield, N. J. The manufacturer believes that this new circular rack which encircles two-thirds of the pole's circumference will set new standards for ease of power capacitor installation. With this unit, no cross arm hangers, mounting shoes, or extra plates are necessary. The contour rack presents a minimum of wall area to the sun thus cutting the heat effect of sun exposure to a fraction of that of conventional arrangements. The same advantage applies with respect to wind loading. Weight of the unit is equalized snugly around the pole, but there is ample room for linemen in the third of the pole not encircled.

Lapp Insulator Co., Inc., Le Roy, N. Y., announces that it has designed and now has in production a new, complete 8.7 kv side-wall transformer bushing meeting all current EEI-NEMA standards. The body is of Lapp Vacuum Process porcelain with clamping knob of Bakelite, especially selected to withstand weathering and aging. Clamping parts operating in tension are of silicon bronze to resist season cracking and stress corrosion. Bushing is normally furnished completely assembled with a copper conductor adapter whch accommodates all types and sizes of transformer leads.

A new lightweight 167-kva single-phase distribution transformer is now being produced by the Line Material Co., Milwaukee, Wis. The unit utilizes an obround tank and offers reduction in weight and size, and provides a compact, streamlined appearance. It is available in all standard primary voltage ratings through 13.8 kv. It may be pole mounted to afford a substantial saving in installation costs. The company reports that all single-phase transformers, 5 through 100 kva, will be redesigned to incorporate the advantages of the obround tank.

Westinghouse Electric Corp., Pittsburgh, Pa., reports that many improvements have been made recently in their watthour meters. The 15-amp rating now has overload capacity of 100 amps; the 30-amp size, 200 amps.

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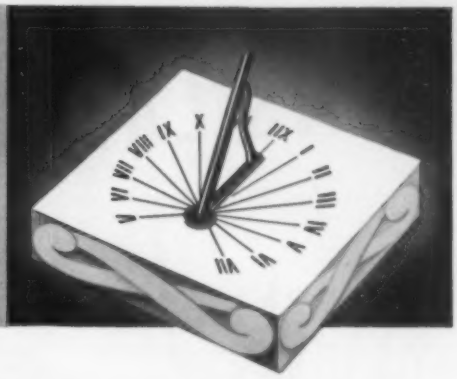

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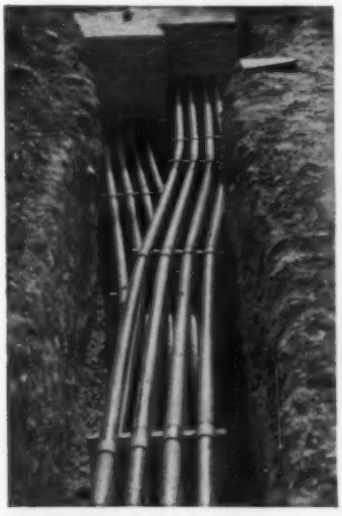

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NISA, New Orleans Chapter. William Dreis, Secretary, 1517 Calliope St., New Orleans, La.

NISA, Mid-South Chapter. Murphy G. Miller, Secretary, 109 Jennings Ave., Knoxville 17, Tenn.

NISA, Southwestern Chapter. George Foshee, Secretary, 203 S. Main, Fort Worth 4, Tex.

NISA, Electric Club of West Virginia. O. E. Jenkins, Secretary, c/o Guyan Machine Co., Logan, W. Va.

Triplex Self-Supporting Secondary and Service Drop Cable—Regularly supplied with stranded or solid all-aluminum power conductors, insulated with RoPrene (Neoprene) and incorporating ACSR or other suitable bare neutral messenger. All-aluminum, copper or copperweld messengers also available. RoLene (polyethylene) insulation available in place of RoPrene.

Rome Triplex Service Drop Cable provides neat, clean looking installation in new home area.

Triplex is ideal for replacements on older houses too, particularly where eaves and roofs pose space problem.

Rome Triplex is less subject to damage by storm and falling tree limbs.

Installation at pole and house is easy and quick, cutting costly man-hours and permitting less expensive hardware.

Pole costs cut up to 50% with Rome Aluminum Triplex

Applications of Rome Aluminum Triplex secondary and service drop cable show several outstanding cost advantages over conventional bare or weatherproof open wire construction.

For one thing, by proper mechanical design it may eliminate one-third to one-half the number of poles normally required for conventional open wire secondaries. This adds up to a substantial saving. It is also possible to utilize mid-span connections for service drops.

Rome Aluminum Triplex is particularly desirable for new residential developments. It is neat in appearance while mechanical design and light weight minimize sag tendencies. This cable construction, with its strong messenger, also affords greater protection against wind and ice loading damage.

Fewer accessories are needed for secondary and service drop connections than for open wire. Maintenance is less costly; conductors are easily accessible.

Longer service life is assured because of mechanical design. RoPrene (Neoprene) and RoLene (polyethylene) insulation have exceptional resistance to weather and all climatic conditions. There are no braids to rot or festoon. Replacement is minimized.

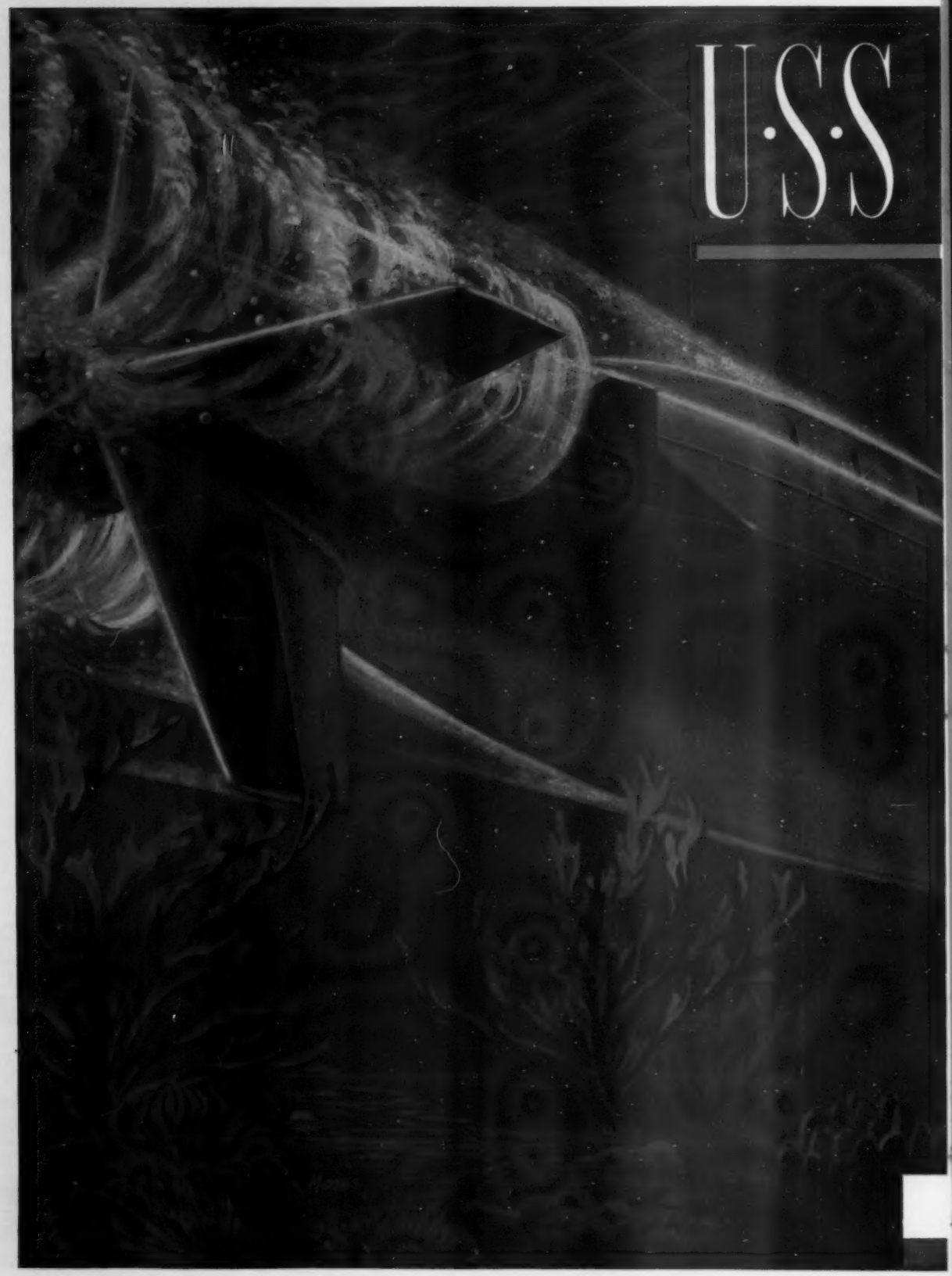
So whether it's secondary or service drop cable or weatherproof wire for distribution, Rome Aluminum offers you a host of advantages. Bulletin RS-5 tells the story—write for it today.

Rome Weatherproof Wire

Regularly supplied with solid or stranded all-aluminum or ACSR conductors, covered with RoLene or RoPrene. Conventional URC triple braid covering can also be supplied.

Rome ALUMINUM

ROME CABLE CORPORATION, ROME, N.Y., AND TORRANCE, CALIF.


U·S·S

Nautilus

first
atomic submarine
uses

TIGER BRAND ELECTRICAL CABLE

The Nautilus was built by General Dynamic Corporation's Electric Boat Division shipyard, at Groton, Conn. She was launched on January 21, 1954.

Very frankly, we cannot recall a more *critical* application of electrical cable than this new atomic-powered submarine. And from one end to the other, this amazing boat is laced with Tiger Brand Electrical Cable.

But here's the important thing—*you* can get the same quality that went into the Nautilus. Just call your American Steel & Wire salesman.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL
GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB!

paper & varnished cambric cable
asbestos wire and cable
shovel & dredge cable
mold cured portable cord
machine tool & building wire
special purpose wire & cable
aerial, underground & submarine cable

USS Tiger Brand — ELECTRICAL WIRE & CABLE — USS

UNITED STATES STEEL

NO CABLES PULLED, 1 - 2

LEAD SHEATHED CABLE (IN CONDUIT). TWO CONDUCTOR

CABLE SIZE	HRS."M". FT.	LABOR COST INSTALLED PER FT. AT FOLLOWING RATES									
		$1.25	$1.50	$1.75	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50	$3.75
12	6.7	.0084	.01	.0117	.0134	.0151	.0168	.0184	.0201	.0218	.0235	.0251
10	10.5	.0131	.0158	.0184	.021	.0236	.0263	.0289	.0315	.0341	.0368	.0394
8	12.4	.0155	.0186	.0217	.0248	.0279	.031	.0341	.0372	.0403	.0434	.0465
6	17.3	.0216	.026	.0303	.0346	.0389	.0433	.0476	.0519	.0562	.0606	.0649
4	22.2	.0278	.0333	.0389	.0444	.05	.0555	.0611	.0666	.0722	.0777	.0833
2	31.6	.0395	.0474	.0553	.0632	.0711	.079	.0869	.0948	.1027	.1106	.1185
1	35.3	.0441	.053	.0618	.0706	.0794	.0883	.0971	.1059	.1147	.1236	.1324
1/0	41.3	.0516	.062	.0723	.0826	.0929	.1033	.1136	.1239	.1342	.1446	.1549
2/0	47.4	.0593	.0711	.083	.0948	.1067	.1185	.1304	.1422	.1541	.1659	.1778
3/0	53.4	.0668	.0801	.0935	.1068	.1202	.1335	.1469	.1602	.1736	.1869	.2003
4/0	63.0	.0788	.0945	.1103	.126	.1418	.1575	.1733	.189	.2048	.2205	.2363
NO CABLES PULLED, 3 - 4												
12	7.4	.0093	.0111	.013	.0148	.0167	.0185	.0204	.0222	.0241	.0259	.0278
10	11.6	.0145	.0174	.0203	.0232	.0261	.029	.0319	.0348	.0377	.0406	.0435
8	13.6	.017	.0204	.0238	.0272	.0306	.034	.0374	.0408	.0442	.0476	.051
6	19.0	.0238	.0285	.0333	.038	.0428	.0475	.0523	.057	.0618	.0665	.0713
4	24.4	.0305	.0366	.0427	.0488	.0549	.061	.0671	.0732	.0793	.0854	.0915
2	34.8	.0435	.0522	.0609	.0696	.0783	.087	.0957	.1044	.1131	.1218	.1305
1	38.8	.0485	.0582	.0679	.0776	.0873	.097	.1067	.1164	.1261	.1358	.1455
1/0	45.4	.0568	.0681	.0795	.0908	.1022	.1135	.1249	.1362	.1476	.1589	.1703
2/0	52.1	.0651	.0782	.0912	.1042	.1172	.1303	.1433	.1563	.1693	.1824	.1954
3/0	58.7	.0734	.088	.1027	.1174	.1321	.1468	.1614	.1761	.1908	.2055	.2201
4/0	69.3	.0866	.104	.1213	.1386	.1559	.1733	.1906	.2079	.2252	.2426	.2599

LABOR: INCLUDES PREPARATION, PULLING & LOSS TIME. (NO TAPS) PULL WIRE IN PLACE, ADD FOR TRUCK OR WINCH RENTAL.

3-55

NO CABLES PULLED, 1-2

LEAD SHEATHED CABLE (IN CONDUIT) THREE CONDUCTOR

CABLE SIZE	HRS."M" FT.	LABOR COST INSTALLED PER FT. AT FOLLOWING RATES										
		$1.25	$1.50	$1.75	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50	$3.75
12	6.3	.0079	.0095	.011	.0126	.0142	.0158	.0173	.0189	.0205	.0221	.0236
10	10.0	.0125	.015	.0175	.02	.0225	.025	.0275	.03	.0325	.035	.0375
8	11.6	.0145	.0174	.0203	.0232	.0261	.029	.0319	.0348	.0377	.0406	.0435
6	16.4	.0205	.0246	.0287	.0328	.0369	.041	.0451	.0492	.0533	.0574	.0615
4	21.1	.0264	.0317	.0369	.0422	.0475	.0528	.058	.0633	.0686	.0739	.0791
2	30.0	.0375	.045	.0525	.06	.0675	.075	.0825	.09	.0975	.105	.1125
1	33.4	.0418	.0501	.0585	.0668	.0752	.0835	.0919	.10	.1086	.1169	.1253
1/0	39.2	.049	.0588	.0686	.0784	.0882	.098	.1078	.1176	.1274	.1372	.147
2/0	44.9	.0561	.0674	.0786	.0898	.101	.1123	.1235	.1347	.1459	.1572	.1684
3/0	50.6	.0633	.0759	.0886	.1012	.1139	.1265	.1392	.1518	.1645	.1771	.1898
4/0	59.6	.0745	.0894	.1043	.1192	.1341	.149	.1639	.1788	.1937	.2086	.2235
250 MCM	66.4	.083	.0996	.1162	.1328	.1494	.166	.1826	.1992	.2158	.2324	.249
300 MCM	75.3	.0941	.113	.1318	.1506	.1694	.1883	.2071	.2259	.2447	.2636	.2824
350 MCM	82.6	.1033	.1239	.1446	.1652	.1859	.2065	.2272	.2478	.2685	.2891	.3098
400 MCM	89.9	.1124	.1349	.1573	.1798	.2023	.2248	.2472	.2697	.2922	.3147	.3371
500 MCM	102.0	.1275	.153	.1785	.204	.2295	.255	.2805	.306	.3315	.357	.3825

LABOR: PREPARATION, PULLING & LOSS TIME. (NO TAPS) PULL WIRE IN PLACE. ADD FOR TRUCK OR WINCH RENTAL.

3-55

Electrical Estimating—III

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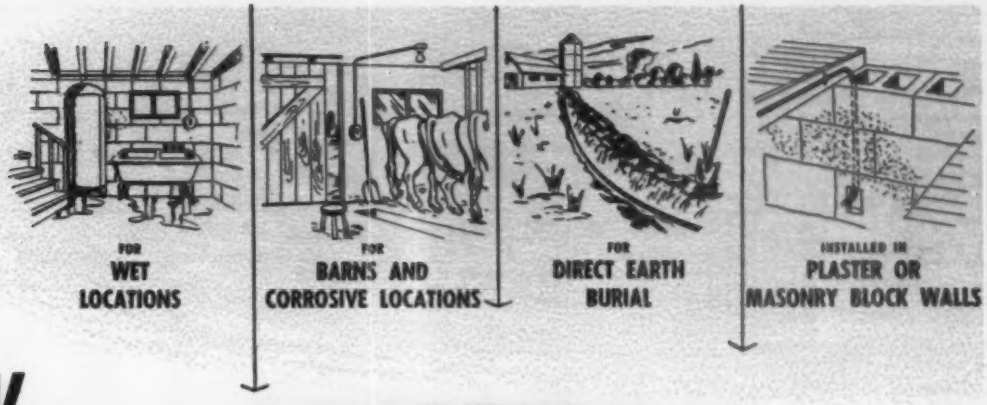

NEW Columbia-UF

UNDERGROUND FEEDER AND BRANCH CIRCUIT CABLE

Columbia-UF cable is a specifically designed thermoplastic cable tested and approved by Underwriters' Laboratories, Inc. and recognized by the National Electric Code (1953) for use in wet, damp or corrosive locations. It is approved for direct earth burial in branch and feeder circuits when provided with overcurrent protection. Columbia-UF is highly resistant to acids, alkalis, lubricants, corrosive fumes and water. It resists fungus and corrosion and will not support combustion.

Columbia-UF is available in sizes 14/2, 12/2, 10/2 with and without ground; 14/3, 12/3 and 10/3 without ground wire; in single conductor in sizes #14 to #4 AWG.

WRITE TODAY FOR ILLUSTRATED BOOKLET

COLUMBIA CABLE & ELECTRIC CORP.

Serving the Electrical Wholesaler Since 1912

255 Chestnut St. **Brooklyn 8, N. Y.**

Non-Metallic Sheathed Cable E. M. T. Flexible Steel Conduit TW A.B.C. Armored Cable Underground Feeder Cable

BASED ON 20 FT. PER SERVICE

SERVICE ENTRANCE CABLE (NON-METALIC) ON WOOD.

SIZE NO CONDRS.	HRS. PER 100 FT.	LABOR COST INSTALLED PER FT. AT FOLLOWING RATES										
		$1.25	$1.50	$1.75	$2.00	$2.25	$2.50	$2.75	$3.00	$3.25	$3.50	$3.75
12/2	5.7	.0713	.0855	.0998	.114	.128	.143	.1568	.171	.185	.20	.2138
10/2	6.0	.075	.09	.105	.12	.135	.15	.165	.18	.195	.21	.225
8/2	7.0	.0875	.105	.1225	.14	.1575	.175	.193	.21	.2275	.245	.2625
6/2	8.0	.10	.12	.14	.16	.18	.20	.22	.24	.26	.28	.30
4/2	9.0	.1125	.135	.1575	.18	.2025	.225	.2475	.27	.2925	.315	.3375
12/3	6.3	.0788	.0945	.1102	.126	.1418	.1575	.1733	.189	.2048	.2205	.2363
10/3	7.0	.0875	.105	.1225	.14	.1575	.175	.193	.21	.2275	.245	.2625
8/3	8.3	.1038	.1245	.1453	.166	.1868	.2075	.2283	.249	.2698	.2905	.3113
6/3	9.5	.1188	.1425	.1663	.19	.2138	.2375	.2613	.285	.3088	.3325	.3563
4/3	11.0	.1375	.165	.1925	.22	.2475	.275	.3025	.33	.3575	.385	.4125
2/3	12.0	.15	.18	.21	.24	.27	.30	.33	.36	.39	.42	.45

LABOR: INCLUDES DRILLING, INSTALLATION, STRAPPING, CONNECTING TO BOX & INSTALLATION OF SILL PLATE. (NO TAPS OR SERVICE HEAD)

3-55

Estimating Forms—Page 4

THE SECOND generally used method of estimating new residential wiring installations is similar to that used on larger commercial jobs. The various outlets are taken off the plans and a unit labor cost is applied to each operation. For example, ceiling light outlets, wall light outlets, switch outlets, and receptacle outlets, etc., are each given a unit labor installation time, which multiplied by hourly labor rate gives a unit installation cost. Similarly, cable runs are estimated and a unit labor cost arrived at in dollars per thousand feet. The cable installation costs are totalized for each different type of cable, as to conductor size and number of conductors, and some contractors measure separately the cable runs at right angles to joists and those running parallel to joists. A higher installation cost is applied to the runs at right angles to the joists to cover the time required boring holes.

In using this system some contractors have found it advisable to classify dwellings into two sizes: small houses where electrical work can be carried through without interruption; and larger dwellings where the nature of the installation requires more precision as to location of outlets and more co-operation with other trades. Unit costs are a little higher, generally, in the second group.

In addition to the basic costs of outlet and circuit installation, the estimate will include installation costs for various special items such as meter and service center, fixture hanging, signal devices, etc.

To facilitate this type of estimating, the esimator will need experience data for the various unit jobs and average installation data for armored cable and non-metallic sheathed cable. In addition he will need installation cost data on numerous specialty items such as special types of fixtures, service centers, bells and chimes, etc.

In using this method, the estimator will follow the foregoing plan to arrive at installation labor cost. In addition, he will draw off the material list and price it. His bid price will then be obtained by adding to the basic labor and material costs the amounts necessary to cover overhead and profit.

3-55

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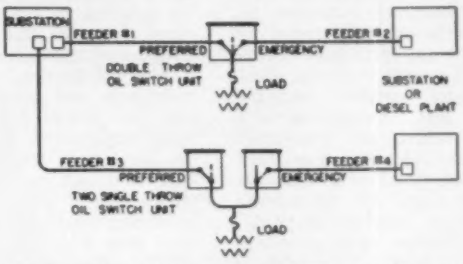
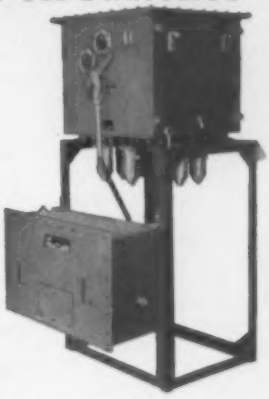
INSURE SERVICE CONTINUITY

with G&W Automatic transfer oil switches

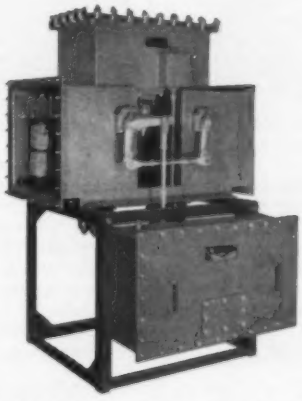


- When preferred feeder voltage fails, the load is automatically transferred to the emergency feeder.
- When preferred feeder voltage is restored (for a period of ¾ minute) the load is automatically returned to the preferred feeder.
- There is no "hunting" on system disturbances. Load cannot be thrown to a "dead" source.
- Model "F6" automatic mechanism provides for remote operator selection of either feeder as the "preferred."



Type "RAD" double throw oil switch unit with Model "F" automatic mechanism.

Model "F" Operating Mechanism



TYPE "DRA" two single throw oil switch unit with Model "F" automatic mechanism. Air filled isolating link box on top.

Improved mechanism removable from watertight case. Motor compresses spring which, when released through action of relays and solenoid, operates the oil switch.

The automatic mechanisms are applied to various forms of Type "RA" oil switches, either for underground cables or overhead connections—up to 23 Kv., 400 amperes. All control wiring is done at the factory. Installation of the unit merely involves connection of the feed and load cables or wires.

Send for Bulletin DA-F which fully describes Model "F" mechanism.

G&W ELECTRIC SPECIALTY CO.

7780 Dante Avenue, Chicago 19, Illinois, U.S.A.

Representatives in principal cities of U.S.A.
In Canada—Powerlite Devices, Ltd., Toronto, Montreal & Vancouver

D-555

1905
50th ANNIVERSARY
1955

News of the industry

edited for Southern readers

EEI schedules 21st annual sales meeting

THE 21ST ANNUAL Sales Conference of Edison Electric Institute will be held March 28-31, 1955, at the Edgewater Beach Hotel in Chicago, it was announced recently by O. R. Doerr, chairman of the Commercial Division Executive Committee of EEI and vice-president of Pacific Gas and Electric Co. More than 1,000 top-level sales executives of the electric light and power industry are expected to attend the Conference which takes on added importance with the anticipated keenness of competitive selling in 1955.

The Conference will begin Monday, March 28, with a full day Home Service meeting at which the responsibilities of the Home Service worker in the selling of electricity will be discussed. Meetings of the EEI Commercial Division's 20 committees will also be held Monday. On Tuesday, March 29, four concurrent group meetings covering selling in the four major markets—commercial, farm, industrial and residential—will be held.

The General Sessions will be held Wednesday, March 30, and Thursday morning, March 31, with carefully selected speakers from the electrical and allied industries surveying the general business and economic conditions and covering the subjects of lighting for all markets, air conditioning, wiring, and appliance manufacture. A highlight of Wednesday morning's session will be the presentation of the annual awards honoring outstanding promotional activities by electric utilities in the fields of planned lighting, farm electrification, industrial electrification, electric appliances, electric laundry equipment and home service. While the awards are presented by prominent electrical manufacturers, publications and associations, the contests are conducted through Edison Electric Institute.

The Conference will conclude on Thursday, March 31, with a General Luncheon Session.

New style convention scheduled by NAED

THE 1955 CONVENTION of the National Association of Electrical Distributors, which will be held in the Conrad Hilton Hotel, Chicago, during the week of May 22nd, will be devoted entirely to the apparatus and supplies field, and electric housewares. Major appliances, radio and television will not be a part of this annual assembly since that division of NAED now meets separately.

Several new policies adopted by NAED are expected to result in a new style convention that will be of value to both distributors and their manufacturer friends. The association has established new registration fees for manufacturers, agents, non-members and other visitors. The fee will be $50.00 per person (instead of the former $5.00), however, each manufacturer conference booth holder will be entitled to register five executives to man the booth without additional charge.

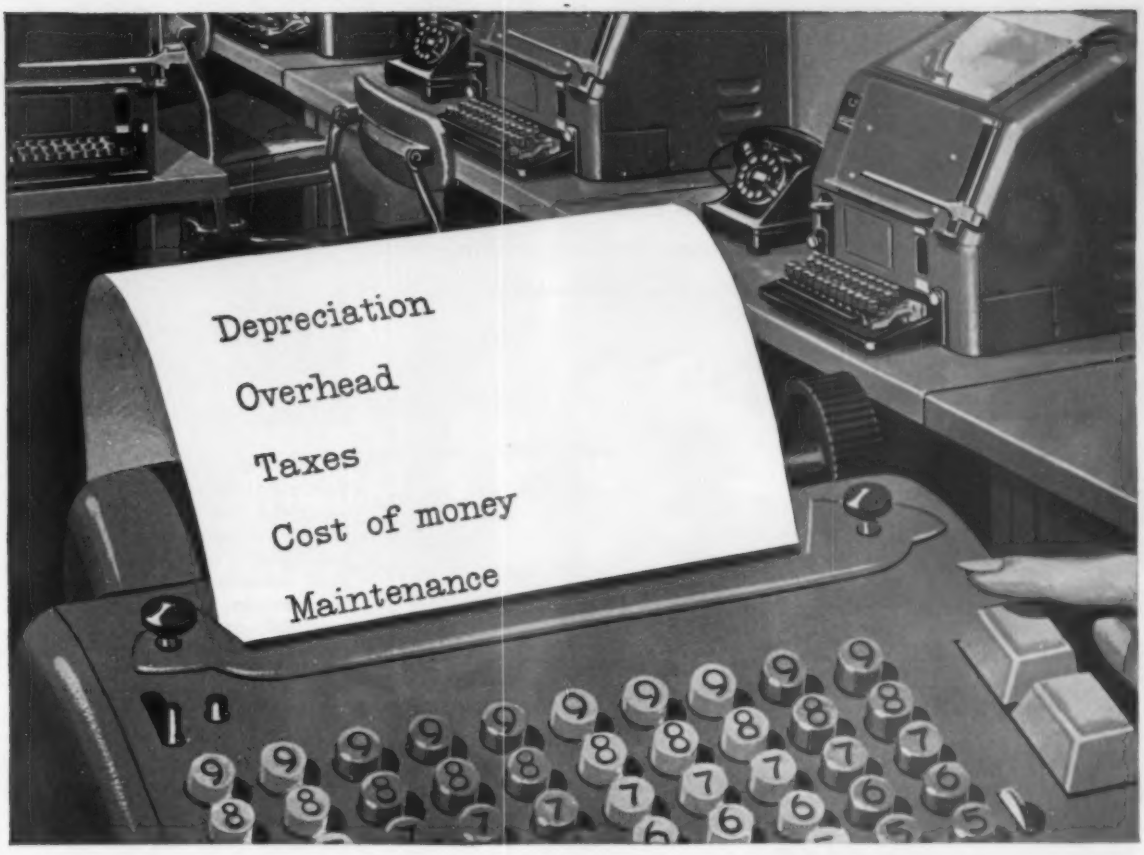
Manufacturers, agents, non-members and other visitors who are not booth holders—but who have registered—will be admitted to the open convention sessions, but will not be admitted to the conference booth center. The members of the association regret that this step was necessary, but traffic through the conference booth area in recent years has become so heavy that the members have been unable to get the full benefits of this activity sponsored for them at their conventions.

Work begun on 500,000 kw Kentucky Utilities plant

THE FIRST SPADEFUL of earth was turned for Kentucky Utilities Company's E. W. Brown Generating Station, which will be one of the state's largest electric power plants, recently in ceremonies at Dix Dam.

The plant, located on a cliff overlooking Herrington Lake, is scheduled to have an ultimate capacity of 500,000 kilowatts and to burn a million tons of Kentucky coal a year when completed. The first generating unit of 125,000 kw capacity, which will cost approximately $16,345,000, is expected to begin operation in 1956.

METERMEN MEET—The officers and the executive committee of the Southeastern Metermen's Association, and their ladies, are shown at a recent get-together with manufacturers' representatives at the Mayflower Hotel in Jacksonville, Fla. The officers of the association are: President, Grant Fonda, Florida Power & Light Co., Ft. Lauderdale, Fla.; 1st Vice-President, V. A. Cramer, Florida Power Corp., St. Petersburg, Fla.; 2nd Vice-President, J. B. McKenzie, Volunteer Electric Co-op., Decatur, Tenn.; Secretary-Treasurer, H. B. Edmonds, Duke Power Co., Anderson, S. C.; and Sergeant-at-Arms, E. E. Timms, Lee County Electric, Ft. Myers, Fla.



If you provide your own communications system...

HAVE YOU ADDED UP ALL THESE COSTS?

Owning and operating your communications system can be a costly experience, with many costs frequently overlooked. Depreciation, taxes, overhead, maintenance, loss of interest on capital all contribute to your total communication expense.

Bell System communications are low in cost. You pay only a fixed monthly charge for services and facilities tailored to your exact needs. No more, no less. Your capital is not tied up but left free for income-producing investments in *your* business.

The installation of your communications is just the beginning of the Bell System job. Maintenance, replacement, inventory, storage, extension and rearrangement are all handled rapidly and efficiently—no longer problems for you.

Let us show you how Bell System know-how and experience can be put to work to solve your communications problems. For a complete communications study, made without charge, call your local Bell Telephone representative today.

TELEPHONE

TELETYPEWRITER

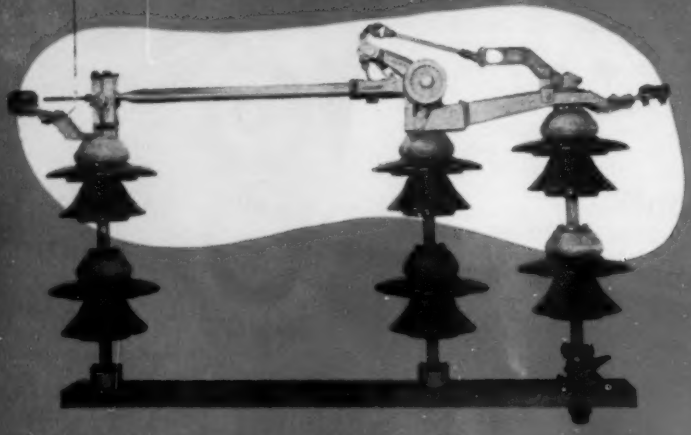
MOBILE RADIO

METERING CHANNELS

BELL TELEPHONE SYSTEM

USCO Vertical-Break Switches

High-pressure contacts that assure you long, maintenance-free operation (even under high-short-circuit conditions)!



USCO Type GT-22
Available: 7.5—230KV, 400, 600, 1200 & 1600 amperes (69 KV, 1200 ampere shown)

FROM ENGINEERING DESIGN to pattern shop to foundry to final assembly and adjustment, the USCO Type GT — and every other USCO switch — is built entirely within our own factory. The very finest in materials and craftsmanship are used in their manufacture. Thus, you're certain of the highest quality and the greatest value for your switch-purchasing dollars.

USCO SWITCHES are designed and built in conformity with NEMA and AIEE Specifications. Their application to your system will not only save you time and money, they'll assure you peace of mind.

FOR FULL DETAILS - without obligation — write us direct.

Another development in electrical power transmission equipment by

USCO

USCO Power Equipment Corp.

829 North 36th Way, Birmingham, Alabama—Phone 59-7241

Designers and manufacturers of high voltage electrical equipment

E. W. Brown, vice-president of Kentucky Utilities Co., Lexington, turns the first spadeful of earth for the new plant to be named for him. Others, from left, are Harry Reid, Versailles, first president of the company; R. W. Watt, present president, and Judge Robert M. Coleman (behind Mr. Watt).

Judge Robert M. Coleman, chairman of the Kentucky Public Service Commission, told the more than 300 local and state officials, industry leaders and company officials, that he was proud of the utilities of the state and in "the great service they are giving at a reasonable cost."

He presented a Kentucky Colonel's commission to E. W. Brown, Kentucky Utilities vice-president, for whom the new plant is named, and said "today is E. W. Brown Day."

R. M. Watt, company president, explained that the chief reason for the new plant was that Kentucky is rapidly becoming an industrial state and the electricity from the new plant will be needed to power the state's industrial growth and attendant growth in the commercial, residential and rural fields.

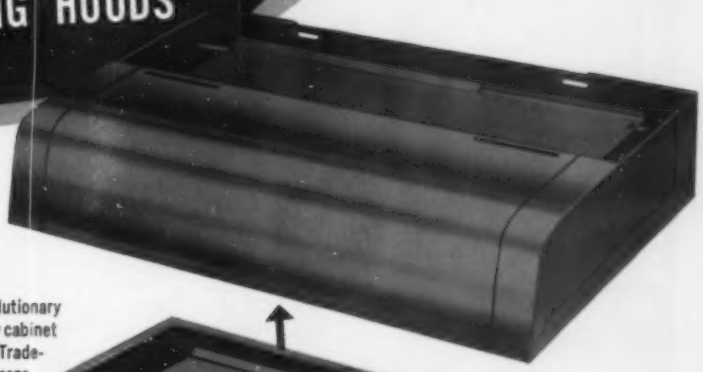
Edwards named to head Arkansas wiring bureau

THOMAS A. EDWARDS, commercial sales representative for Arkansas Power and Light Co., at Batesville, has been named manager of the newly formed Arkansas Adequate Wiring Bureau at Little Rock, AP&L Vice-President W. M. Shepherd announced recently. Mr. Edwards has already assumed his duties in Little Rock.

The new bureau is a chapter of the National Adequate Wiring Bureau. Its purpose is to raise the standards of wiring on new homes.

...THE DEMAND IS FOR COPPER IN THE MODERN KITCHEN
and the trend is to Trade-Wind!

Only
TRADE-WIND
gives you GENUINE COPPER in these
beautifully designed
VENTILATING HOODS

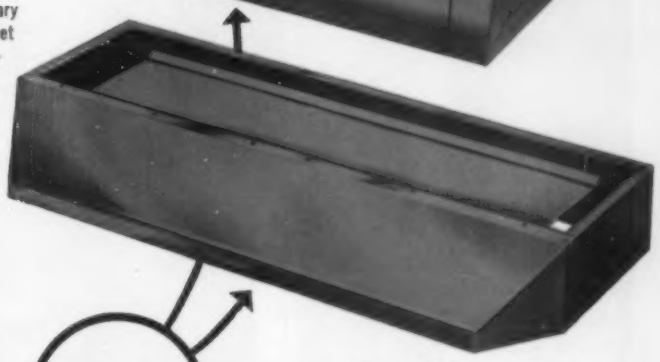


Here's the First Expansion Hood on the Market— Fits All Cabinets

Styled by a leading industrial designer, these revolutionary Expansion Hoods by Trade-Wind are adjustable to any cabinet length from 30" to 54". Incorporate the proven Trade-Wind baffle plate for even distribution of the discharge. Available in genuine copper or stainless steel. Stylish, simplify installation, increase efficiency.

This is the Hood that set the Style

These modern styled hoods by Trade-Wind are the most popular selling hoods in America. Come in genuine copper or stainless steel. 39" and 42" lengths. Include baffle.



Genuine Copper

NOT PLATED OR PAINTED ON!

Only Trade-Wind Hoods are made from exclusive DUOMETL — solid copper and steel laminated sheet stock. The finish CANNOT be removed—even by scratching!

Under-Hood Light!

New, easy-to-clean . . . with twin sockets and independent switch. Available with any Trade-Wind hood or as an accessory.

USE ANY OF THESE TRADE-WIND TOP EFFICIENCY VENTILATORS

FOR A BETTER KITCHEN THAT SELLS HOMES FASTER.

Trade-Wind Motorfans, Inc. 7755 PARAMOUNT BOULEVARD, DEPT. ES, RIVERA, CALIFORNIA

Home wiring will be certified upon meeting standards set up by the Arkansas Bureau.

Sponsors are AP&L, National Electrical Contractors Association, Electrical Contractors Association, Arkansas Home Builders Association and Electrical Distributors of Arkansas.

The bureau's program will promote the installation of adequate wiring which meets national standards. Mr. Edwards will work with electrical contractors and home builders in the Little Rock area. Future plans call for a statewide program.

Mr. Edwards has been associated with the power company since 1950 when he was hired as a salesman. He formerly owned a partnership in a Batesville electric appliance company.

Federal Pacific moves Houston sales office

THE HOUSTON sales office of Federal Pacific Electric Co., Newark, N. J., has been moved to the Bermac Building, Room 202, it was announced recently by Robert C. Graves, vice-president in charge of sales. The office is under the supervision of T. Beyert, branch manager in Houston.

Houston is part of the Central sales region, one of the several geographical regions created by Federal Pacific to expedite their rapidly growing sales activities across the country. The Central region, with headquarters in St. Louis, Mo., is managed by W. M. Stark.

Southwestern orders new generating unit

A GENERATING UNIT capable of producing 100,000 kilowatts of electric power has been ordered for Southwestern Gas and Electric Company's Lieberman power plant, it was announced recently by J. Robert Welsh of Shreveport, La., president. Addition of this unit, the largest ever to be installed in Southwestern's system, will triple the output of this plant, located on Caddo Lake near Shreveport.

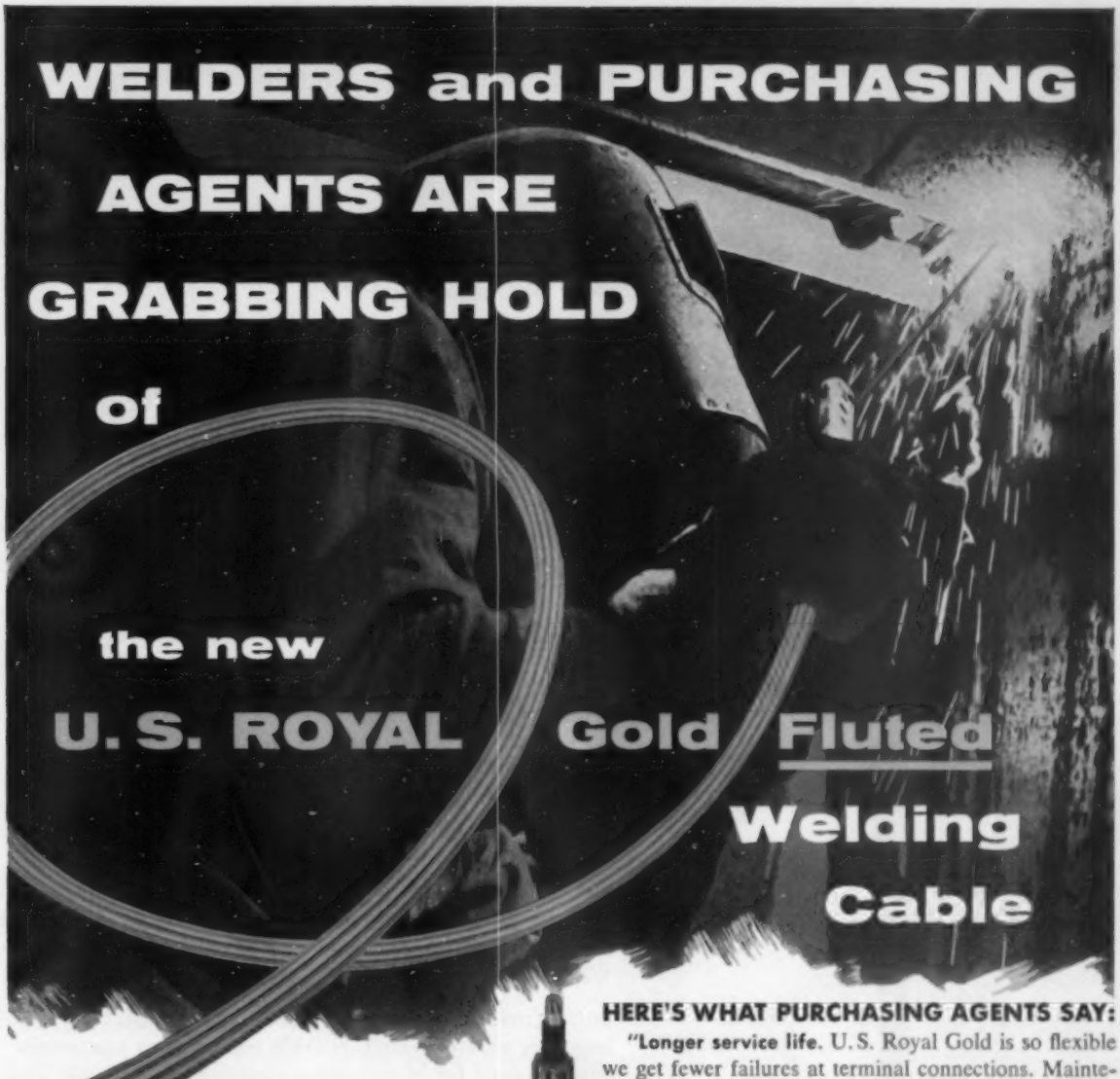
Work on expanding the plant for the new addition will get underway in September and plans call for the unit to get in operation by April, 1957.

Two generating units capable of producing 54,000 kilowatts of power are in operation at the Lieberman plant at present. This was the first power plant Southwestern built following the close of World War II. The first unit capable of producing 27,000 kilowatts was placed in operation in 1947 while the second unit was cut in operation in 1949.

Since 1947, Southwestern has added 222,000 kilowatts of generating capability to its interconnected system. At present, a

ROLLER-SMITH SALESMEN—O. V. Scott, Jr., Atlanta, Ga., left, recently appointed district sales representative for the Alabama, Georgia and Florida territory by the Roller-Smith Corp., is shown with James F. Zboyovsky, regional manager for the Bethlehem, Pa., electrical switchgear manufacturer, during a recent get-together in Atlanta.

WELDERS and PURCHASING AGENTS ARE GRABBING HOLD of the new U. S. ROYAL Gold Fluted Welding Cable



HERE'S WHAT WELDERS SAY:

"[illegible] to handle. It's so light and flexible I don't [illegible] the usual 'drag.' A cinch to handle in cramped quarters."

"I get easier grip. The *fluted* jacket does it. U.S. Royal Gold coils easily, resists kinks and tangles."

"Easier to see because of the bright yellow color. I don't trip over it. And I can easily tell it from the black cable whenever I have to use *two* cables on the machine."

"The *fluted* jacket has a greater surface area. That makes the cable cooler to handle, because heat is dissipated quicker."

HERE'S WHAT PURCHASING AGENTS SAY:

"Longer service life. U.S. Royal Gold is so flexible we get fewer failures at terminal connections. Maintenance costs go down, replacements are few and far between."

"Superior impact resistance. Tests show that U.S. Royal Gold Welding Cable possesses greater resistance to impact than conventional constructions. It shows up on my cost sheets."

"Lower accident insurance charges. U.S. Royal's bright yellow color catches everyone's eye. It also keeps workmen from running vehicles over it or letting equipment drop on it. Result: U. S. Royal Gold lasts even longer."

"It has high resistance to moisture—thanks to its 60% natural rubber jacket and its 60% natural rubber insulation."

Made exclusively by United States Rubber Company and available at your electrical supply house.

WRITE ADDRESS BELOW FOR FREE FOLDER that gives facts demonstrating the superiority of U. S. Royal Gold Fluted Welding Cable.

US RUBBER

UNITED STATES RUBBER COMPANY

Electrical Wire and Cable Department • Rockefeller Center, New York 20, New York.

Pays off at the take-off!

this KEARNEY COMBINATION will speed your construction

Here's a complete "system" for making trouble-free mid-span take-offs in less time. Everything needed is made by Kearney . . . to Kearney quality standards . . . field-tested to help your crews do a better job every time.

SPAN CLAMP provides a practical and dependable way of dead-ending service wires to the bare neutral of the secondary in mid span. It is used in combination with the . . .

WEDGE-TITE CLAMP . . . easy to use and dependable because it is self-tightening. Constructed of corrosion-resistant materials throughout and plated for use on all types of conductors.

SQUEEZON CONNECTORS embody the newest developments in easy-to-install, reliable compression connectors. May be used for bi-metallic connections.

SERVICE CABLE TIES are made of soft aluminum. May be easily applied with finger pressure to secure insulated wires to the bare neutral.

AIRSEAL completely seals connections against air, moisture and any other corrosive elements. Easily kneaded on by hand . . . never hardens or cracks.

277

For Better Construction . . . Safer Maintenance

JAMES B. KEARNEY CORPORATION ST. LOUIS MO. GUELPH, ONT.

Specify KEARNEY PRODUCTS

The Mark of Quality

JAMES B. KEARNEY CORPORATION • 4234-42 CLAYTON AVENUE, ST. LOUIS 10, MISSOURI • Canadian Plant: GUELPH, ONTARIO

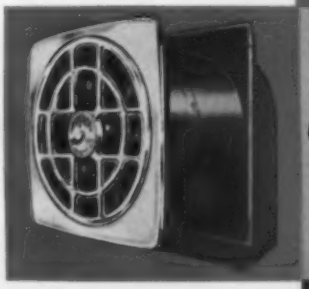
Now!

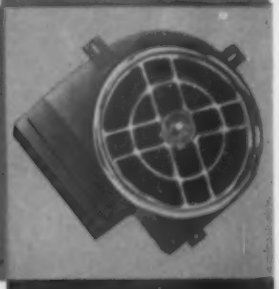
progress

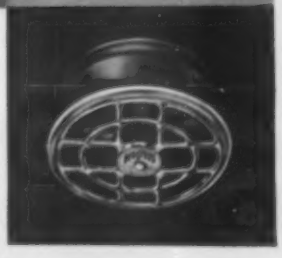
Power Vent

VENTILATING FANS

. . . a complete line with "years-ahead engineering" incorporating many exclusive features plus Progress' mass production know-how — to bring you a better product at a lower price.







Just look at these "plus" features:

- Exclusive Progress "all-size sleeve" permits easy installation regardless of wall thickness up to 14" (And only ½ as much inventory to stock).
- Progress "Power-Vent" removes more air in less time.
- Striking grill design with exclusive Progress "super-chrome" or baked white enamel finish.
- Heavy gauge steel construction with exclusive Progress rust-proof outdoor finish.
- Entire grill assembly easily removed with turn of knurled thumbscrew for easy cleaning.
- Heavy-duty, kitten-quiet motor *fully guaranteed for 5 years.*

Progress POWER-VENT Fans are fully tested for plus performance both in the laboratory and on the job.

Whether your customer is planning to build . . . to rebuild . . . or to replace, there's a Progress POWER-VENT fan that's best for his job — and you can sell him with the same confidence that America has placed in Progress lighting fixtures for nearly half a century.

progress

WRITE FOR BULLETIN FB-55

PROGRESS MANUFACTURING CO., INC.

CASTOR AVENUE AND TULIP ST., PHILADELPHIA 34, PA.

75,000 kilowatt generating unit is being added at the company's Knox Lee power plant, located on Lake Cherokee near Longview, Texas. When the Knox Lee and Lieberman additions are completed, Southwestern will have added 397,000 kilowatts of generating capability to its system since World War II.

Mr. Welsh also announced that a basement and two-floor addition to the company's office building will be constructed. The new addition will join the present building on the east side. The site is presently being used as a company parking lot. The foundation is designed and will be built to accommodate a six-story building but only two stories will be built at the present time. The new building will be 60 feet wide by 150 feet long, same length as the present building.

Left to right, Robert E. Harper, chairman, NBP; Vice-President Richard M. Nixon; Former President Herbert Hoover, recipient of the 1954 NBP Silver Quill Award; and Harvey Conover, chairman of the board of NBP, and master of ceremonies of the NBP Silver Quill Award Dinner.

Hoover receives NBP Silver Quill Award

FORMER PRESIDENT Herbert Hoover was the recipient recently of the highest tribute of the business press, the 1954 Silver Quill Award of National Business Publications, Inc.

The presentation of the award was made by Vice-President Richard M. Nixon, the recipient of the 1953 Award. The award was made at the National Business Publications' Silver Quill Award Dinner, held in Washington, D. C., before a group of nearly 1,000 member - publishers and their guests representing nearly every branch of business and industry, as well as government.

Harvey Conover, president, Conover-Mast Publications, and chairman of the board of National Business Publications, served as master of ceremonies. In his introductory comment, he pointed out that "sound business decisions are essential to the continuing prosperity of our enlightened economy. Business magazines are dedicated to the enduring service of providing the knowledge that is necessary for those sound decisions. That is why we seek each year to present our Silver Quill Award to that person who has best epitomized those things for which we stand and in which we serve. The Silver Quill of NBP, like the organization that awards it, is synonymous with consecrated service to business and industry and to the government that guarantees our freedom of enterprise."

The 1954 Silver Quill Award to former President Hoover was made on the basis of his distinguished services to business and industry through the leadership he has provided in the planning, programming, and progress of the Commission on Organization of the Executive Branch of the Government.

An interesting feature of the award dinner was a series of three minute talks on various aspects of government and business by several Members of the Cabinet of the United States, heads of governmental departments, and nationally known industrialists and businessmen.

ELECTRICAL SOUTH, as well as the other six magazines published by W.R.C. Smith Publishing Co., is a member of National Business Publications. William J. Rooke, chairman of the board of W.R.C. Smith Publishing Co., is currently serving as vice-chairman of NBP.

Union Electric closes appliance sales stores

UNION ELECTRIC Company of Missouri, St. Louis, has announced that it is withdrawing from the retail sale and repair of electrical appliances.

Present plans call for closing the company's stores at 311 South Grand, 249 Lemay Ferry Rd., 7423 Manchester, 6500 Delmar, and 6312 Easton, and to discontinue the sale of appliances at all of its other offices.

The company said that retail appliance dealers at this time are doing an excellent job of selling electrical appliances and the company's merchandising operations represented only a minor part of total appliance sales. Also, since the war, more customers have been paying their bills by mail and using the more conveniently located pay stations. This has resulted in fewer bills being paid at the suburban branch stores. The company suspended merchandise sales during the war and post-war scarcity period, but resumed the operation in 1950.

There is to be no change in the company's sales promotional program on behalf of dealers and distributors and others selling electrical merchandise.

Arkansas P & L holds managers' conference

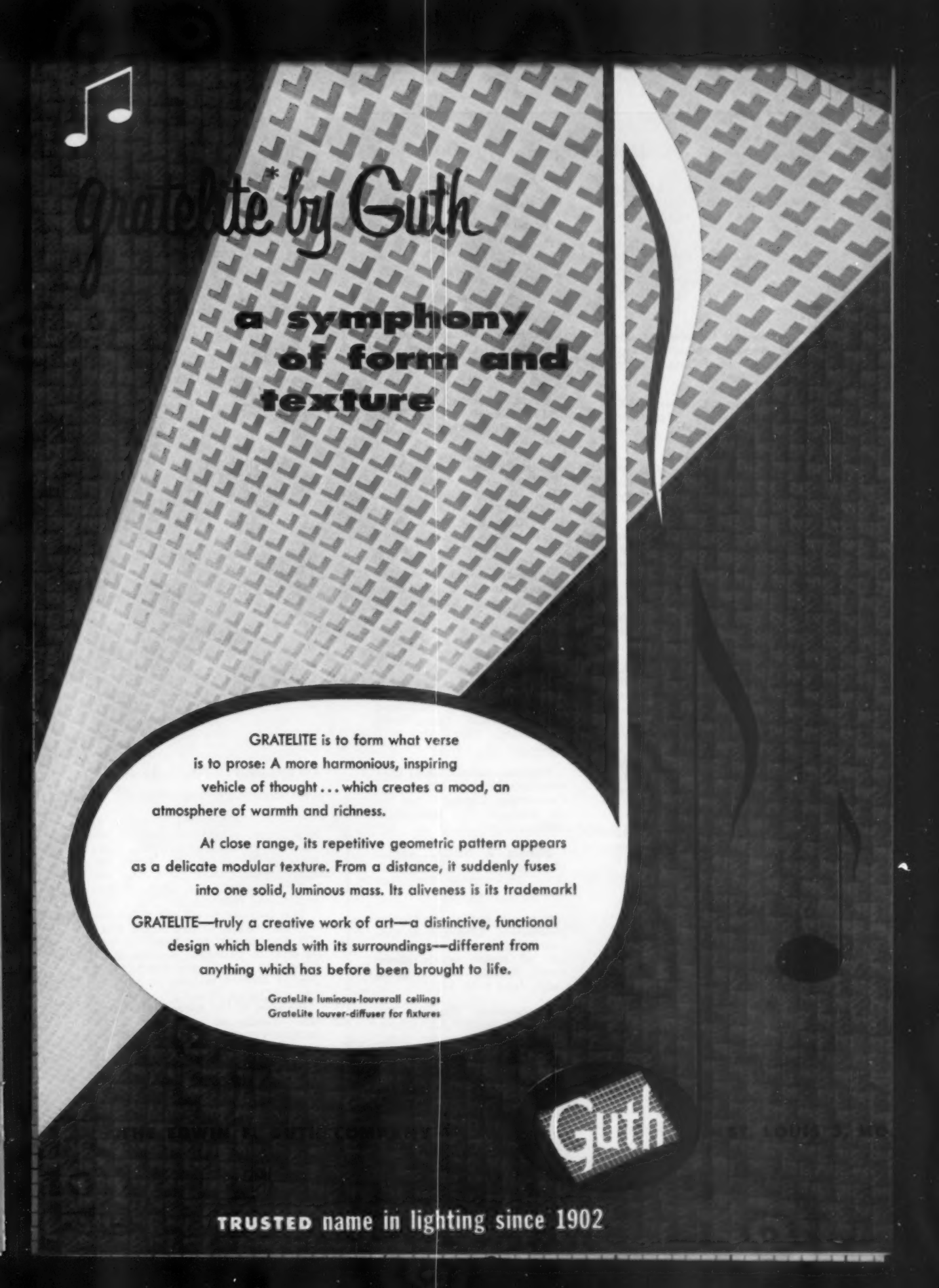
OFFICIALS of Arkansas Power & Light Co., Little Rock, recently joined with Eastern Division managers and supervisors at an annual Managers' Conference at Forrest City.

This was the first of a series of management meetings conducted at seven division points in the state.

The two-day meeting, conducted in Arkansas Power & Light's office building, brought together 66 supervisory employees of the 18 towns in the division, with approximately 25 officials from the company's general offices in Little Rock and Pine Bluff.

The first day's session was conducted by Eastern Division Manager J. E. Dews, and took as its theme: "Better Management for a Better Company." Mr. Dews' opening remarks were entitled: "We Have Come This Far . . ." He was followed on the program by division supervisors, a local manager and a foreman who presented talks aimed at improving operations and methods which will help this company operate more efficiently, while giving better service to Eastern Division customers.

The opening day speakers and


GrateLite* by Guth
a symphony of form and texture
GRATELITE is to form what verse is to prose: A more harmonious, inspiring vehicle of thought . . . which creates a mood, an atmosphere of warmth and richness.
At close range, its repetitive geometric pattern appears as a delicate modular texture. From a distance, it suddenly fuses into one solid, luminous mass. Its aliveness is its trademark!
GRATELITE—truly a creative work of art—a distinctive, functional design which blends with its surroundings—different from anything which has before been brought to life.
GrateLite luminous-louverall ceilings
GrateLite louver-diffuser for fixtures
Guth
TRUSTED name in lighting since 1902

Dates Ahead

Georgia Chapter, IAEI, Annual Meeting, Ralston Hotel, Columbus, Ga., March 21-22, 1955.

Southeastern Electric Exchange, Annual Conference, Boca Raton Hotel and Club, Boca Raton, Fla., March 21-23, 1955.

Oklahoma Utilities Association, Annual Convention, Mayo Hotel, Tulsa, Okla., March 24-25, 1955.

Mississippi Chapter, IAEI, Annual Meeting, Heidelberg Hotel, Jackson, Miss., March 28-29, 1955.

Southern Region, IES, Annual Conference, Ft. Harrison Hotel, Clearwater, Fla., March 31-April 1, 1955.

North Louisiana-East Texas Chapter, IAEI, Annual Meeting, Hotel Caddo, Shreveport, La., April 1-2, 1955.

Southwestern Region, IES, Annual Conference, Gunter Hotel, San Antonio, Texas, April 3-5, 1955.

Southeastern Metermen's Association, Florida Meter Short Course, University of Florida, Gainesville, Fla., April 4-8, 1955.

Southeastern Electric Exchange, Engineering and Operation Section, Roosevelt Hotel, New Orleans, La., April 7-8, 1955.

American Institute of Electrical Engineers, Southern District Meeting, St. Petersburg, Fla., April 13-15, 1955.

Alabama Chapter, IAEI, Annual Meeting, Thomas Jefferson Hotel, Birmingham, Ala., April 14-15, 1955.

Tennessee Chapter, IAEI, Annual Meeting, Andrew Jackson Hotel, Nashville, Tenn., April 18-19, 1955.

Petroleum Industry Electrical Association and **Petroleum Electrical Supply Association,** Joint Convention, Shamrock Hotel, Houston, Texas, April 20-22, 1955.

Florida Chapter, IAEI, Annual Meeting, Marion Hotel, Ocala, Fla., April 25-26, 1955.

Protective Relay Engineers, Eighth Annual Conference, Department of Electrical Engineering, A. & M. College of Texas, College Station, Texas, April 25-27, 1955.

National Association of Lighting Maintenance Contractors, Annual Conference, Henry Grady Hotel, Atlanta, Ga., April 25-27, 1955.

South Carolina Chapter, IAEI, Annual Meeting, Hotel Columbia, Columbia, S. C., May 3-4, 1955.

Joint Chapter Meeting, IAEI, Blackstone Hotel, Tyler, Texas, May 6-7, 1955. Joint annual meeting of the following chapters: George Welman (La.); North Louisiana-East Texas; Texas; and Texas Gulf Coast.

American Institute of Electrical Engineers, Electric Heating Conference, LaSalle Hotel, Chicago, May 10-11, 1955.

North Carolina Chapter, IAEI, Annual Meeting, Carolina Hotel, Raleigh, N. C., May 10-11, 1955.

District 5, NECA, joint meeting with IBEW, Texas Hotel, Fort Worth, Texas, May 9-12, 1955.

National Association of Electrical Distributors, 47th Annual Convention, Conrad Hilton Hotel, Chicago, Ill., May 22-25, 1955.

District 3, NECA, Annual Meeting, George Washington Hotel, Jacksonville, Fla., June 2-3, 1955.

National Industrial Service Association, 22nd annual convention of the national association of motor repair shops, Hotel Statler, Los Angeles, Calif., June 6-10, 1955.

Southeastern Electric Exchange, Personnel Administration Section, Roanoke Hotel, Roanoke, Va., Aug. 11-12, 1955.

Southeastern Electric Exchange, Engineering and Operation Section, Charlotte Hotel, Charlotte, N. C., Sept. 22-23, 1955.

their topics included:

Eddie Motsch, local manager, Marianna, "Better Management Begins in the Local Office"; W. R. Ellis, line crew foreman, Parkin, "The Foreman is a Part of Management"; G. C. Davis, division engineer, "How Can the Engineers Help the Local Manager Manage Better?"; J. E. Shelby, division storekeeper, "What Part Does the Storekeeper Play in Local Management?"; W. P. Patten, division superintendent, "Building, Maintaining and Operating—and Doing it Safely"; R. M. Scott, Division sales manager, "We Must Sell More to Keep our Company Growing"; O. S. Robinson, industrial power engineer, "Power Business Requires Wise Selling"; E. R. Pate, division meter superintendent, "Correct Metering is the Cash Register"; J. D. Wood, division office manager, "The Record Must Be Accurate"; and J. D. Jacobs, assistant to division manager, "Personnel and Costs." Mr. Dews' closing remarks were entitled: "We Must Press Forward . . ."

A dinner, at which Assistant to the President C. E. Evans, was the featured speaker, was included in the meeting.

AP&L President R. E. Ritchie opened the second day's program with a discussion of the company's currect problems and projects. Others on this program included Vice-Presidents R. H. Teed, H. F. Minnis, W. M. Shepherd and Treasurer J. L. Bodie. Vice-President C. Allon Clift presided at the session.

A noon luncheon closed the conference.

Oklahoma utility orders two turbine generators

THE PUBLIC SERVICE Company of Oklahoma has ordered two 125,000 kilowatt turbine generators, complete with condensers, from the Westinghouse Electric Corp., for installation in Tulsa, Okla., it was announced recently.

The two outdoor-type machines will be capable of producing 400,000 horsepower and together will be able to generate enough electricity to supply the needs of a city of 400,000 people, or one the size of Dallas, Texas.

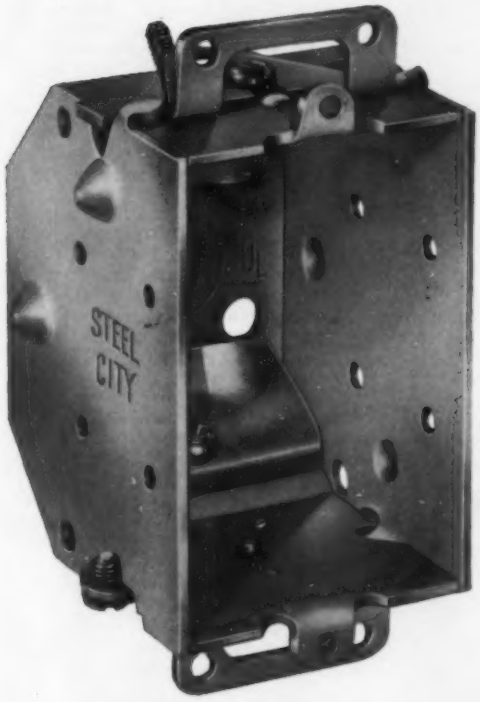
Because of the normally moderate Oklahoma weather, both turbine-generator units will be weather-proofed so they can be installed outdoors, eliminating the usual covering powerhouse.

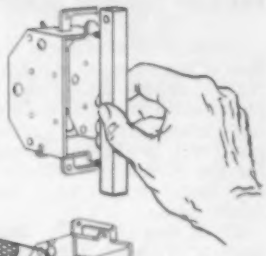
The two giant units will be built with Westinghouse inner-cooled windings and thermalastic insulation. Voltage regulating devices on both machines will be controlled by magnetic amplifiers. Both units will be re-heat steam

quality

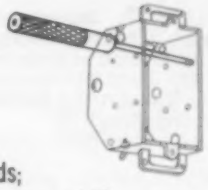
is more than a word

It's a round-the-clock business at Steel City Electric— with constant checks



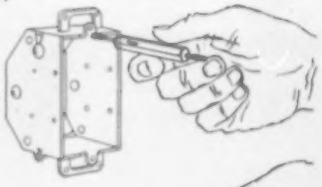


that mounting holes
are always "true"

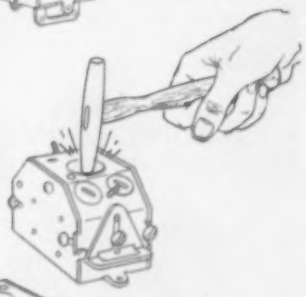


always clear
and free of obstruction

— with cleanly tapped threads;



that knockouts
remove easily
without damaging the box;



and that
parts fit tightly
and rigidly together
— because the dies
are accurate
and cut both sharp and clean;

with screws in place
but not too tight
— for easy installation.

A Steel City switch box
quality-checked at every stage of production

at STEEL CITY ELECTRIC COMPANY

Pittsburgh 33, Pa.

turbines with normal temperature and pressure conditions.

First of the two units is expected to be shipped in December this year; the second, in December, 1957. The turbines will be manufactured at the Westinghouse South Philadelphia Works, while the generators will be built in East Pittsburgh, Pa.

G-E selects N. C. site for new lighting plant

GENERAL ELECTRIC has announced that it has selected Hendersonville, N. C., as the site for a modern, multi-million-dollar outdoor lighting manufacturing plant. The plant will be the new headquarters for the company's Outdoor Lighting Department, now located in Lynn, Mass.

L. Byron Cherry, department general manager, told state, county and community leaders at a recent luncheon that Hendersonville would become "The Outdoor Lighting Center of the World."

When in full operation, probably by mid-1956, the new plant will employ approximately 600 workers in the manufacture of street and flood-lighting equipment, traffic control systems, and military and airport lighting products. The annual payroll will be more than two-million-dollars.

Construction of the plant, consisting of a two-story office structure fronting a one-story laboratory and manufacturing building on a 50-acre site, will get under way immediately. Total floor space will be about 200,000 square feet.

Mr. Cherry emphasized that the Outdoor Lighting Department, while a part of the General Electric Co., will be established in Hendersonville as a separate, autonomous business with its own research, engineering, marketing, and manufacturing facilities.

Mr. Cherry said that among the reasons for selection of Hendersonville as the site for the new plant were its potential for growth and its climate, which will provide engineers with ideal conditions for all forms of lighting research.

Other G-E plants constructed in the South since the end of World War II include a Lamp Wire Factory in Goldsboro, N. C., an Automatic Blanket Factory in Asheboro, N. C., the huge Appliances Park in Louisville, Ky., Miniature Lamp Factory in Memphis, Tenn., Fluorescent Lamp Factory in Jackson, Miss., a Small Motor Plant in Jonesboro, Ark., an Electronic Tube Factory in Anniston, Ala., a Medium Transformer Plant in Rome, Georgia, a Head Light Factory in Lexington, Ky., and a Receiving Tubes Factory in Owensboro, Ky.

The march of progress from one of man's earliest forms of lighting to today's modern outdoor lighting is dramatized here as L. Byron Cherry, left, general manager of General Electric's Outdoor Lighting Department receives a pine heart torch from Richard Crowe, Cherokee Indian. The torch was lighted from the eternal flame maintained by generation after generation of Cherokees in the Great Smokies of North Carolina. The occasion was the ground-breaking for G-E's new multi-million dollar outdoor lighting plant at Hendersonville.

Miami raises standard for adequate wiring

AN ELECTRICAL INDUSTRY committee on interior wiring design at Miami, Fla., has raised the 1955 standard for adequate wiring in homes to 100 amperes. The committee pointed out in a recent announcement that this will make 24,000 watt-220 volt service available in every home. The new standard, however, will apply only to homes up to 3000 square feet. Larger homes would require more capacity.

The new standard for wiring went into effect January 1 and follows a decision by the National Association of Home Builders to adopt the 100-ampere service for even the smallest homes.

In its announcement the committee said that the "now widely accepted role of air conditioning in all classes of housing" affected its decision, also the fact that even in the smallest homes individual circuits are required for numerous kitchen and laundry appliances.

The committee suggested that a special purpose outlet—20 ampere, 240 volt—be installed in each room for a room air conditioner where a central air conditioning system is not in prospect.

Richter sales agency formed in Chattanooga

ANNOUNCEMENT of the formation of the G. E. Richter Sales Agency, 933 Chattanooga Bank Bldg., Chattanooga 2, Tenn, has been made by the firm's principals, G. E. Richter, Jr., and G. E. Richter, III.

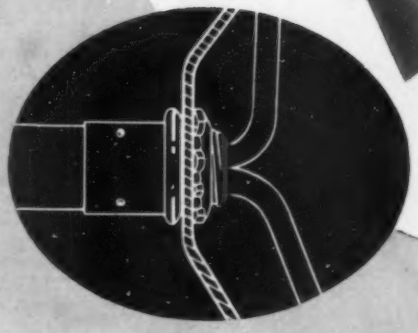
The new sales firm will cover East Tennessee, North Georgia and Northern Alabama, calling on manufacturers using items such as wire, heating elements, thermostats and fractional horsepower motors. The firm has voiced an interest in adding lines that will work in with the above items.

G. E. Richter, Jr., prior to the formation of the Chattanooga sales agency, had spent the past 40 years as vice-president in charge of sales

Red Throat

B-M 21B, THE NEW INSULATED THROAT INDENTER CONNECTOR FOR E.M.T.

Four Ways Finer



1. Protruding rounded red plastic lip of bushing prevents cutting of insulation—eliminates shorts.
2. Full thread screws into all conduit fittings. Lip of RED THROAT bushing protects thread from damage.
3. Deep dished eight pronged lock nut is easier to drive on—screws flush to shoulder and digs into metal of box for vibration proof positive ground.
4. Permanent locked-in bushing insures smooth burr-free raceway for easy fishing. No extra work and costs no more.

Briegel, the Original Indenter Fittings are neater in appearance, easier and faster to use. Installation is simple and less expensive. Two quick squeezes sets them forever. Try B-M Indenter Fittings and get more profits from each job!

ALL BRIEGEL FITTINGS ARE U. L. APPROVED AS CONCRETE-TIGHT

Order from Your Wholesaler!

All B-M Indenter Fittings are U.L. Approved as concrete-tight and for general use (File Card E10863). Also comply With Federal Specifications W-F-406.

UL

BM

BRIEGEL METHOD TOOL CO.

GALVA • ILLINOIS

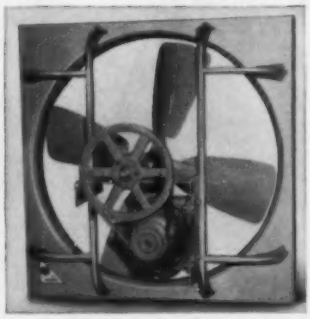
Warehouse Stocks in Principal Cities for Immediate Delivery!

"Buffalo"

OPENS THE DOOR

TO A BIG, NEW FIELD OF VENTILATION

- "Buffalo" PACKAGE PROPELLER FANS in size range from 24" up to 144"!
- Effectively ventilating entire plants and auditoriums!
- Many special industrial and commercial applications formerly requiring major installations!
- Easy, low-cost installation! Units shipped COMPLETE with V-belt motor drive.
- Performance-proved! All fans factory-run before shipment. All performance ratings in strict accordance with Test Codes of A.S.H.V.E., N.A.F.M., P.F.M.A. and U. S. Commercial Standard CS-178. "Buffalo" "Q" Factor* construction in every one you order.



Drive side of Design 53 Belt-Air Fan (48" size).

YOU'RE IN ON THE GROUND FLOOR of a rapidly expanding field, when you install "Buffalo" package propeller fans like these Belt-Airs. New orders coming in all the time for new and bigger applications. **But don't delay!** Have us mail you Bulletin FM-1234, or ask the "Buffalo" Engineer in your nearest major city.

*The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.

Discharge side of 72" Design 53 Belt-Air. A complete package unit V-belted to 5 H.P., 1750 rpm motor, rated at 64,000 cfm at free delivery. We recently shipped 60 similar units handling 1,439,000 CFM for ventilating a large Coliseum in the Southwest.

"Buffalo"

BUFFALO FORGE COMPANY

210 Mortimer St. Buffalo, N. Y.

PUBLISHERS OF "FAN ENGINEERING" HANDBOOK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

Sales Representatives in all Principal Cities

Industrial Exhausters | Belted Vent Sets | Propeller Fans | "E" Blowers-Exhausters

for the American Lava Corp., Chattanooga.

G. E. Richter, III, since completion of World War II service, has traveled the Southeastern territory as an industrial equipment sales engineer. For the past 2½ years he was connected with the Steel Tape Division of the Stanley Works, New Britain, Conn.

Southeastern reps elect 1955 officers

J. THURMAN COBB, Atlanta, Ga., manufacturers' representative, was recently elected to serve as president of the Southeastern Electrical Manufacturers' Representatives Club of Atlanta, during the coming year.

Other officers elected were Rufus G. Price, Jr., direct factory

J. T. Cobb

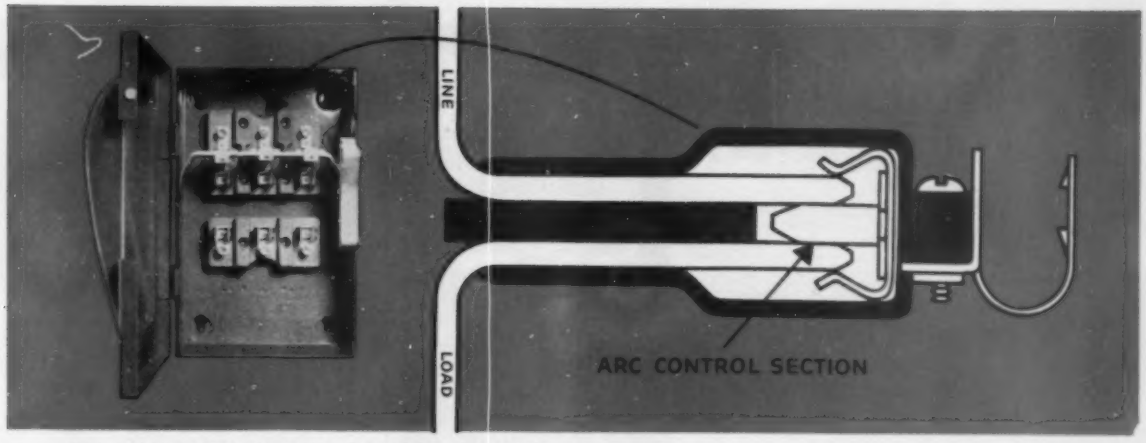
representative for Orangeburg Manufacturing Co., vice-president, and Frank P. Bell, business manager ELECTRICAL SOUTH, secretary-treasurer.

Directors elected to serve during 1955 are manufacturers' agents C. C. Myrick, Jr.; Clarence B. Rogers of C. B. Rogers & Associates; and H. K. Dewees of the H. K. Dewees Co., in addition to Charles J. McMurry, direct factory representative of the Rome Cable Corp.

Harrison named Florida Gulf area ECA head

DURING A RECENT meeting of the Gulf Electric Contractors Association, composed of contractors in the Panama City-Tallahassee area of Florida, officers were elected for 1955.

Marion M. Harrison, Marion M. Harrison, Inc., Panama City, was elected president of the group; David P. Robertson, Dave Robertson Electric Co., Panama City,



EXCLUSIVE VACU-BREAK PRINCIPLE PREVENTS EXCESSIVE ARCING, which, in ordinary switches, causes burning, pitting and rapid deterioration of contacts. Also, contacts enclosed within the insulated head are protected from dirt and dust.

ONLY BULLDOG VACU-BREAK

SAFETY SWITCHES

Smother Arcs

so quickly, so safely!

LONGER SWITCH LIFE! NO MAINTENANCE! EASY INSTALLATION!

Perhaps you've been under the impression that all safety switches are alike. *You're right*—with one important exception! BullDog Vacu-Break Safety Switches are different from *—and superior to*—all other makes you can buy.

Here's why: *Only* BullDog Safety Switches incorporate such advanced features as the famous Vacu-Break arc-control chamber which smothers arcs so quickly and so safely. Other highlights include: bolt-tight connections with Clampmatic contacts . . . wide-open wiring gutters . . . generous knockouts, plus many others. Installation is easier, maintenance and call-backs are eliminated.

Install attractive BullDog Vacu-Break Safety Switches. In fact, *whatever* you recommend in electrical distribution equipment, look *first* to BullDog. Your nearby Qualified Distributor or BullDog Field Engineer is at your service. Or write: BullDog Electric Products Company, Detroit 32, Michigan.

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IF IT'S NEW
. . . IF IT'S DIFFERENT
. . . IF IT'S BETTER . . . IT'S

BULLDOG

ELECTRIC PRODUCTS COMPANY

A Division of I-T-E Circuit Breaker Company

Export Division: 13 East 40th Street, New York 16, New York. ***In Canada:*** BullDog Electric Products Company (Canada), Ltd., 80 Clayson Road, Toronto 15, Ontario.

CONSULT THE FOLLOWING SOUTHERN REPRESENTATIVES:

Wilson Electrical Equipment Company, 2930 Commerce St., P.O. Box 1725, Houston, Texas; 101 E. Maple St., San Antonio, Texas • Walker Electrical Company, Inc., 70 Bennett St., N.W., P.O. Box 8, Station D, Atlanta, Georgia • Standard Electric Manufacturing Company, 2401 Federal St., Dallas 1, Texas

"We like the
EASY-TO-SEE SAFETY
of B+C boxes"—

Say Leading Construction and Maintenance Engineers

B&C RUGGED CONSTRUCTION

in a type and size to fit every junction or pull box need

For uniform quality, easy workability and long-lasting construction, B&C Telephone Cabinets, Junction and Pull Boxes have proved themselves *a good investment* wherever installed. Every cabinet and box in the large and complete B&C line is constructed in strict compliance with the Underwriters Laboratories Specifications and the National Electrical Code. Only the finest steels are used.

Type "PF"
TELEPHONE CABINET *(above)*
Flush mounting. Hard grey hammer-tone enamel trim front, galvanized box.

Type "SC"
SURFACE BOX
Screw cover. Hard light grey enamel finish, or galvanized.

Type "A"
SURFACE HINGE COVER BOX
Same general specifications as Type "SC" above.

Write for complete catalog data and specifications . . .

UL and B&C

Your Seals of Dependability and Safety

METAL STAMPING CO.

590 MEANS ST., N. W., ATLANTA, GEORGIA

was named vice-president; and J. T. Duncan, Freeman Electric Co., Inc., Panama City, was elected secretary-treasurer.

Mr. Harrison will also serve the group as Florida Association of Electrical Contractors State Director.

Hartt, Middle West engineer firms merge

THE FIRM of Jay Samuel Hartt, consulting engineers, and Middle West Service Co., both of Chicago, have been merged under the name of Middle West Service Co.

Offices will be maintained at both 327 S. LaSalle St., Chicago, (Hartt's address) and 20 N. Wacker

Edwin Vennard

Dr. (Middle West's address), during the next few months while additional office space at the latter address is being provided.

The heads of both organizations are to remain active in the merged company. Edwin Vennard will be president of the company and Jay Samuel Hartt will be chairman of the executive committee. Rodman McClanahan will continue as executive vice-president.

The merger unites two strong and well-known organizations in the management consultant field.

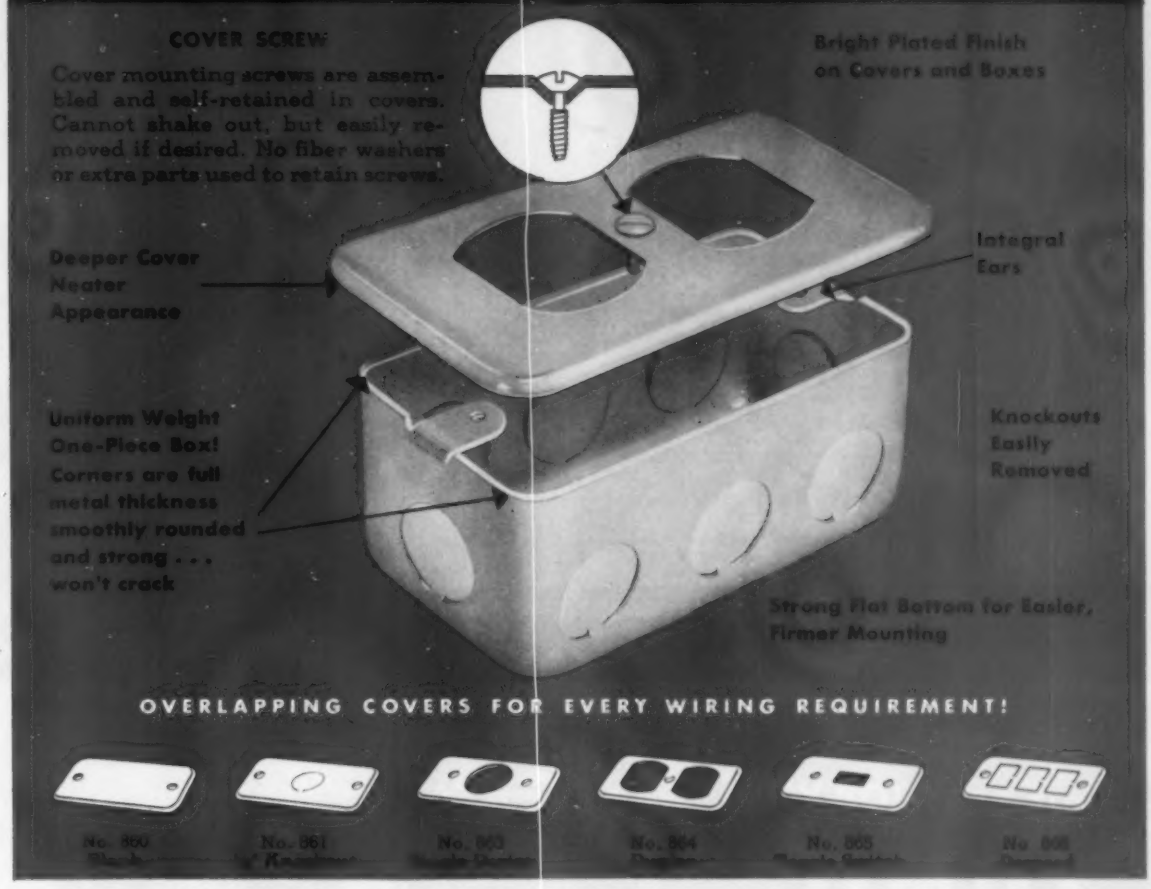
Maryland area reps elect new officers

AT A RECENT MEETING held at the Engineers Club in Baltimore, members of the Electrical Manufacturers Representatives Association, Inc., which serves representatives in the Washington-Baltimore area, elected officers to head their group during 1955.

Officers elected are George Bury, president; Murray Nelson, vice-president; Al Daniels, secretary; and John Rosche, treasurer.

The association's executive committee now consists of Clarence

NEW! IMPROVED COMPLETE LINE OF RACO HANDY BOXES AND COVERS


COVER SCREW
Cover mounting screws are assembled and self-retained in covers. Cannot shake out, but easily removed if desired. No fiber washers or extra parts used to retain screws.
Bright Plated Finish on Covers and Boxes
Deeper Cover Neater Appearance
Integral Ears
Uniform Weight One-Piece Box! Corners are full metal thickness smoothly rounded and strong . . . won't crack
Knockouts Easily Removed
Strong Flat Bottom for Easier, Firmer Mounting

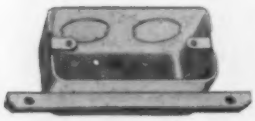
OVERLAPPING COVERS FOR EVERY WIRING REQUIREMENT!

No. 860 No. 861 No. 863 No. 864 No. 865 No. 868

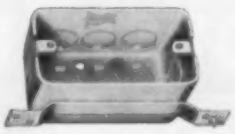
RACO HANDY BOXES ARE ONE PIECE DRAWN STEEL!

Standard Sizes—4" long, 2⅛" wide by 1½", 1⅞" or 2⅛" deep

Available with or without brackets in all sizes

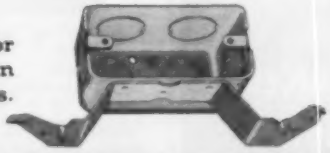


A Bracket, ½" knockouts in 1½" and 1⅞" deep boxes. Either ½" or ¾" knockouts in 2⅛" deep boxes.

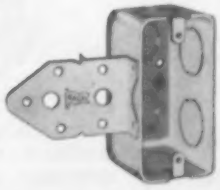


F Bracket, ½" knockouts in 1½" and 1⅞" deep boxes.

O Bracket, ½" or ¾" knockouts in 2⅛" deep boxes.



B Bracket, ½" or ¾" knockouts in 1½" and 2⅛" deep boxes.



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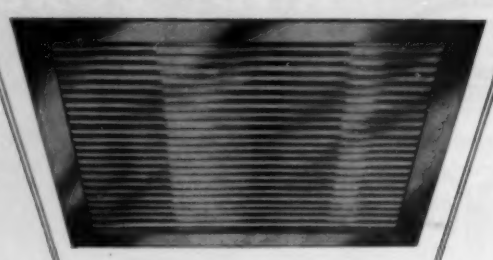
"A RACO BOX FOR EVERY NEED"

ALL-STEEL EQUIPMENT INC. Aurora, Illinois

AIR-FLO MODEL 610



AUTOMATIC CEILING SHUTTER

Outstanding Features of Model 610 Automatic Ceiling Shutter

- Neutral Aluminum Color Blends With Any Decoration and Color Scheme
- Flush Appearance
- One Continuous Panel Regardless of Width
- Maximum Free Air Opening
- Fusible Links Release Spring Action in Case of Fire
- Full Opening Feature Minimizes Fan Air Delivery Loss

*Southeastern Factory Warehouse
177 Harris St., N. W., Atlanta, Ga.

MANUFACTURED BY AIR CONDITIONING PRODUCTS COMPANY
2340 W. LAFAYETTE - DETROIT, MICHIGAN

DO THE BEST JOB WITH
TOMIC CABLE CONNECTORS!

SIMPLE – slips in from outside.
QUICK – installed in 10 seconds.
CONVENIENT – for securing contacts.
DEPENDABLE – can not shake loose.

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UNDERWRITERS' APPROVED

On Sale at Your Wholesaler

Manufacturer of Famous Tomic Thinwall Connectors and Couplings

Tomic Sales & Engineering Co.
20000 Sherwood Ave. Detroit 34 Michigan

No. 100 Romex Connector for ½" K. O.

No. 200 Service Entrance and Range Connector for ¾" K. O.

PRICED RIGHT— You Can SAVE

Walker, chairman, William Batchler, and Leo McCourt.

Outgoing officers of E.M.R.A. include George Ridgley, Bill Chenoweth, Roy Buress and Frank Butts.

G-E's Lamp Division increases districts

GENERAL ELECTRIC'S Lamp Division is establishing two new sales districts with headquarters in Atlanta, Ga., Leonard J. Campbell,

Robert E. Lawler

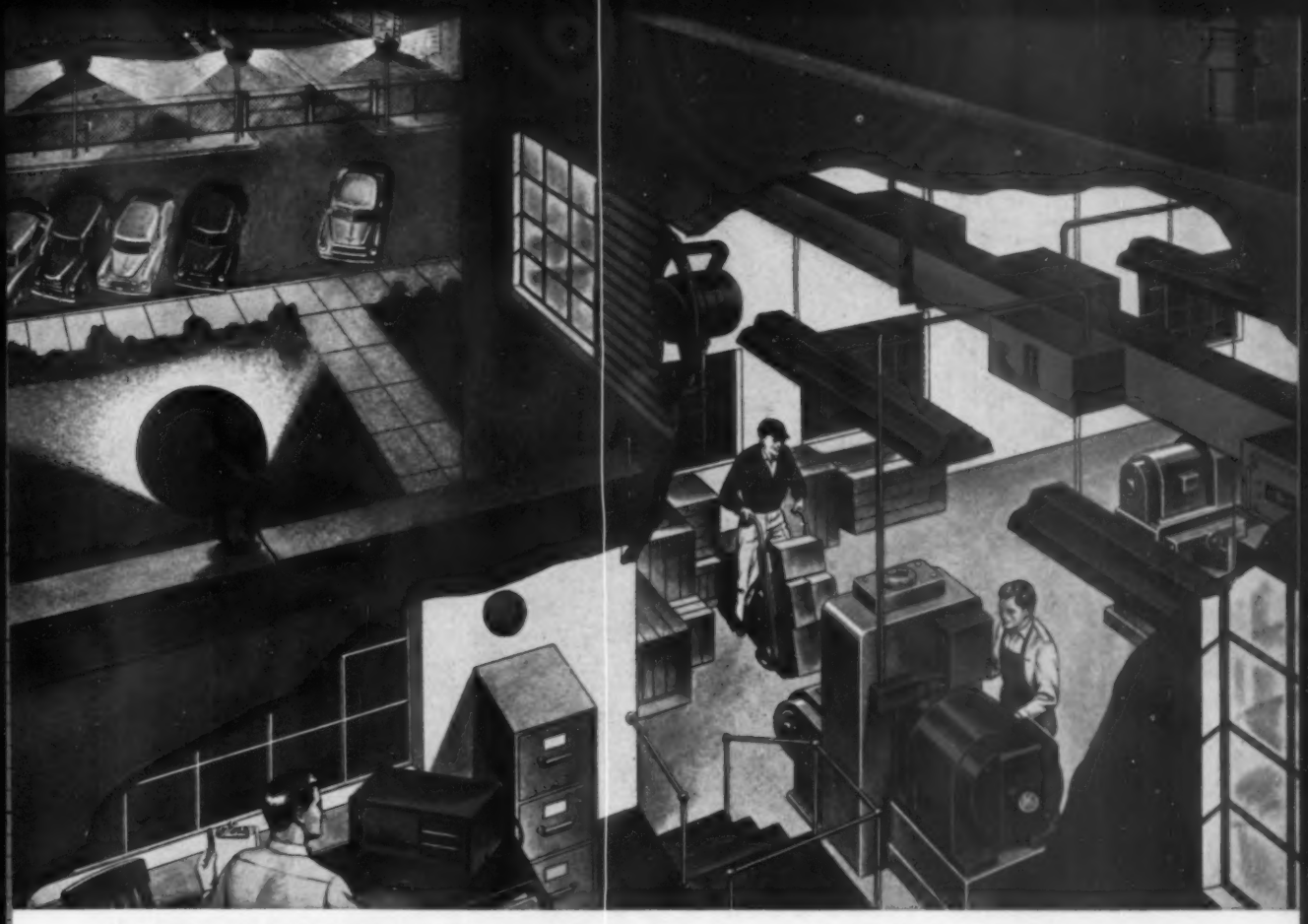
manager of the division's Southeastern Sales District, has announced.

A new "Dixie Sales District" for the Miniature Lamp Department was established with Robert E. Lawler as manager. Mr. Lawler,

J. W. Billings

who resides at 147 Lindbergh Drive., N.E., Atlanta, has been a salesman for the Southeastern Sales District since 1951. A native of Hargrove, Ala., he attended Massey Business College, and after several previous jobs joined G-E at Miami in 1944.

A "Southern Sales District" for the Photo Lamp Department will



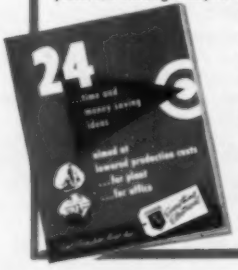
MORE THAN 100,000 ELECTRICAL ITEMS are promptly available from nearby Graybar — complete wiring systems for any industrial need . . . apparatus for power distribution . . . indoor and outdoor lighting units and lamps . . . ventilating, signaling, and "intercom" equipment . . . plus cable, conduit, wiring devices, and tools needed to install them.

If it's electrical, you can get it from Graybar

SEND FOR YOUR FREE COPY, TODAY

This fact-filled booklet "24 Time- and Money-saving Ideas" gives case-history installation data . . . demonstrates conclusively the savings possible through improved utilization of electrical equipment of all kinds. Write to the address below for your copy.

For more information relative to any electrical installation, however, call your nearby Graybar Representative — he'll be happy to serve you.



And, because you want efficient service, here are four more reasons why your next order for electrical equipment and supplies should read "via Graybar."

1. Graybar distributes the products of over 300 of the nation's leading manufacturers — well known lines of proved design and construction.

2. You can get complete price and specification data on all these items through your local Graybar office or warehouse.

3. Local stocks of standard electrical items and fast delivery on non-stock lines assure on-schedule deliveries for both construction and every-day maintenance jobs . . . in emergencies, shut-down time can be held to a minimum.

4. Graybar Specialists in all of the major electrical fields are always available for consultation on out-of-the-ordinary projects. You can rely on them for careful analysis of your customer's requirements and complete impartiality in product recommendations.

Make it a point always to call Graybar *first* — a single source . . . a single responsibility will save you time and money.

Graybar Electric Co., Inc. Executive Offices: Graybar Building, 420 Lexington Ave., New York 17, N. Y. 412-73

CALL GRAYBAR FIRST FOR...

Graybar Everything Electrical

IN OVER 110 PRINCIPAL CITIES

GraybaR ELECTRIC CO., INC.
420 Lexington Ave., New York 17, N. Y.

Out in FRONT
NOW PACKAGED IN A HANDY CARRYING CARTON
No. 1986
PACKED IN THIS MERCHANDISING CARTON
ALSO
No. 1929
No. 1984
No. 1986
No. 1933
PORCELAIN PRODUCTS
Wireholder Merchandising Pack
Porcelain Products' wireholders *sell* because they're pace-setters. They're dependable—rugged . . . and packaged in a carton that is convenient to handle. It's practical—handy.
Porcelain Products' wireholders and secondary service materials have been known as *Quality Products* for years because of their strong, sturdy construction. Metal reinforced wireholders are designed with metal in tension, porcelain in compression—hot-dip galvanized steel parts. All wireholders have sharp, fast driving screw threads—large pulley-action wire holes —and many more features.
Porcelain Products' wireholders give you more value for your dollar—greater customer satisfaction. See your distributor.
ELECTRICAL PORCELAIN SINCE 1894
60 years
Porcelain Products, Inc.
PP INC.
FINDLAY, OHIO

be managed by James W. Billings, who comes to Atlanta from the Oakland, Calif., Pacific Sales District. A native of Corbin, Ky., he attended the University of Alabama. He joined G-E at Oakland in 1939.

Mr. Campbell said his Southeastern Sales District in the future would represent the Large Lamp Department. Until separate offices can be established, all three districts will operate through the existing district headquarters at 187 Spring St., N.W., Atlanta.

Petroleum Electrical groups plan convention

THE PETROLEUM INDUSTRY Electrical Association and the Petroleum Electrical Supply Association have scheduled a joint convention to be held at the Shamrock Hotel, Houston, Texas, April 20-22, 1955, according to a recent announcement by J. S. Shull, the Texas Pipe Line Co., Houston, publicity chairman for the meeting.

Representatives from most of the firms of the petroleum industry having communications systems and/or electrical departments will be in attendance at this convention.

The supply distributors and manufacturers will have on display the latest innovations and developments in design and manufacture of all types of equipment used in this field.

Talks and papers will be presented on the various and complex problems confronted by the man in the field as well as open forum discussions for answers to questions of all in attendance.

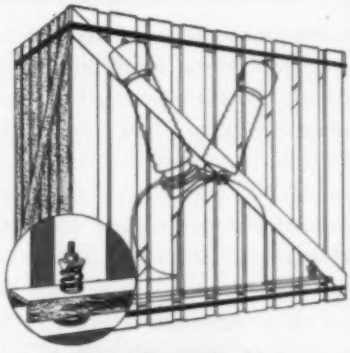
Hezzie Clark, superintendent of the Communications and Electrical Department, Humble Pipe Line Co., is chairman of the convention.

NAED Zone 8 holds New Orleans meeting

DELEGATES from more than 115 member companies of Zone 8 of the National Association of Electrical Distributors gathered in New Orleans, La., recently to discuss programs and problems of the electrical distributing industry. Zone 8 comprises the States of New Mexico, Texas, Oklahoma, Arkansas, Mississippi and Louisiana.

In addition to the general discussions by both the Appliance and Apparatus and Supplies Divisions of the association, members heard Operating Cost Consultant Louis M. Nichols speak on "Unsound and Uneconomic Features of Our Present Profitless Prosperity." Mr.

New, compact, lightweight design extended to higher voltage classes



Shipped on Springs for Maximum Protection

During shipment, each Allis-Chalmers large current or potential transformer floats on springs in a specially designed crate. Result: maximum protection against damage en route. Assurance that you will get a unit in top condition ready for service.

NOW YOU CAN TAKE ADVANTAGE of Allis-Chalmers new designs for oil-insulated outdoor current and potential transformers for circuits through 115 kv. They take less space, require less foundation or mounting structure than older designs. They are easier to handle during installation.

Corona-Free Design for Long Life

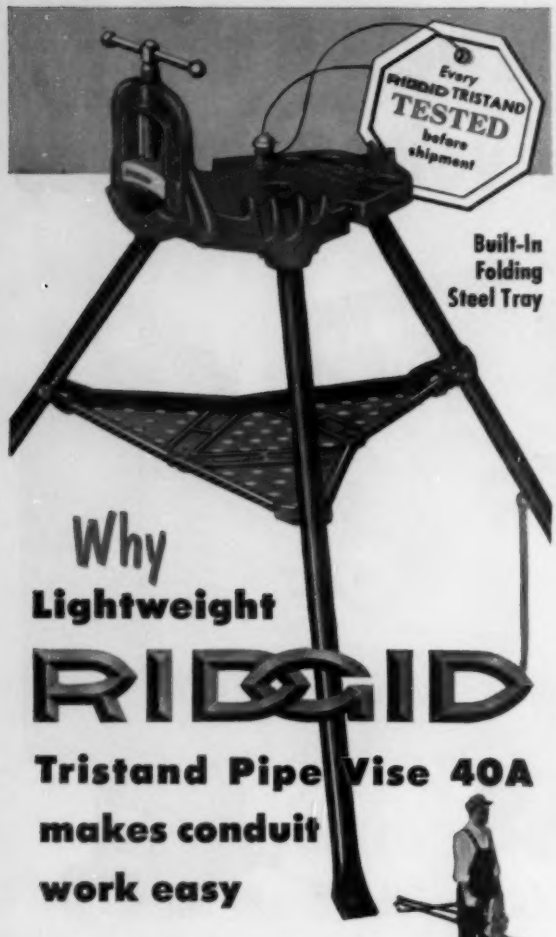
All units in the line are corona-free. They utilize solid insulation at critical points to reduce stresses and lengthen life. Extensive internal overvoltage tests have proved all voltage classes.

Sturdy Construction

Tanks are all-welded, hermetically sealed to protect insulation and oil from sludge formation. Unique bushing construction provides for an oil reservoir common to both bushing and transformer, reducing the oil requirements and cutting the size and weight.

Get more information by calling your nearby A-C district office. Or write Allis-Chalmers, Milwaukee 1, Wisconsin, for your copy of "PT's Are Getting Smaller." A-4544

ALLIS-CHALMERS



Why Lightweight RIDGID Tristand Pipe Vise 40A makes conduit work easy

Extra easy to set up...

built-in folding steel tray pushes up easily to fold legs of Tristand for easy carrying; tray pushes down easily to set up, holds stand solidly rigid.

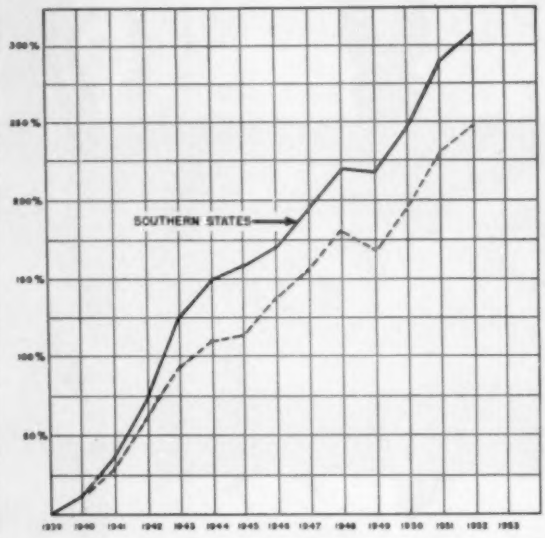
Handy Work Bench...

extra-strong stand and tray all one unit. Full size vise-base has 3 benders, ceiling brace screw, lots of tool slots, besides handy tool tray. Most for your money—your Supply House has them, can demonstrate and deliver fast!

THE RIDGE TOOL COMPANY • ELYRIA, OHIO, U.S.A.

RIDGID Work-Saver Pipe Tools

Gains in Income Payments to Individuals Highest in the South



Broken Line All Other States

Increases in income payments to individuals have been truly phenomenal in the South and Southwest. From 1939 to 1952 there was a 316% gain in this area while the gain in the rest of the country was only 247%. No other large geographical region has had such a significant rise. Of the many influencing factors none has been more important than the continuing industrialization of the Southern States. This has had the effect of stabilizing an agricultural economy by income payments from manufacturing. These two complement each other and provide a basis for the stable and prosperous development of this region for many years to come.

To stay abreast of the continuing growth throughout the South-Southwest, be sure to keep your subscription to ELECTRICAL SOUTH in force.

ELECTRICAL SOUTH

806 Peachtree Street, N.E. Atlanta 5, Georgia

Nichols also discussed the topic "Appliance Distributors Should Recognize the Changed Nature of Their Market." NAED's Executive Director Arthur W. Hooper described the association's new national program.

Westinghouse adds new Southeastern district

OTIS O. RAE, vice-president in charge of the Westinghouse Electric Corporation's Southeastern region, has announced the creation of a new district within the region.

Mr. Rae said the new area has been named the Carolina District and will include both North and South Carolina with headquarters in Charlotte, N. C. The company's Southeastern region includes, in addition to these two states, Georgia, Florida, Alabama, Louisiana, and major portions of Mississippi and Tennessee.

At the same time, Mr. Rae announced the appointment of J. H. Reeves, Jr., as manager of the new Carolina district. He comes to this post from that of manager of the Greenville, S. C., office.

A graduate of Alabama Polytechnic Institute, Mr. Reeves joined Westinghouse in 1925 on the graduate student training course. He held numerous sales positions in the Birmingham, Charlotte, and Greenville offices before being named manager at Greenville in 1953.

C. Y. House, Jr., succeeds Mr. Reeves as manager of the Greenville branch office. Mr. House was graduated from the Georgia Institute of Technology in 1930 and joined Westinghouse that year on the graduate student training course. He held various sales posts in the Atlanta office until his appointment in 1941 as sales engineer in the Charleston, S. C., office.

Farm Electric Council formed in Kentucky

THE KENTUCKY rural electric cooperatives, electric companies, farm appliance and equipment manufacturers and distributors and educational agencies have formed a Kentucky Inter-Industry Farm Electric Council.

Its purpose is to promote the increased and more beneficial use of electricity on the farm and in the farm home to improve the economic and living standards of rural people.

J. R. Milier, Owensboro, manager of the Green River Cooperative, was elected president of the new organization which was formed recently in Louisville. Other officers are Harry W. Carloss, Lexington, customer service director of Kentucky Utilities Co., first vice-president; C. H. McCabe, Louisville, Smith Distributing Co., second vice-president, and June Davis, Shelbyville, Kentucky Department of Agriculture, secretary-treasurer.

With R. D. Allen, Louisville,

Officers of the newly formed Kentucky Inter-Industry Farm Electric Council discuss proposed plans for the group at the organizational meeting in Louisville. They are, left to right, J. R. Miller, council president; June Davis, secretary-treasurer; Harry W. Carloss, first vice-president; C. H. McCabe, second vice-president; and R. D. Allen, executive committeeman.

BERKO

THE GLASS ELECTRIC HEATING PANELS SOLD EXCLUSIVELY THROUGH ELECTRICAL CONTRACTORS

BERKO leads in engineering, advertising, sales. To get your share of the increasing demands for radiant heating,

write to BERKO today for free computation manual —

BERKO ELECTRIC MANUFACTURING CORPORATION

212-40 Jamaica Ave., Dept. ES-3, Queens Village 28, N. Y.

REPRESENTED BY . . . **J. S. McGee,** 525 W. 26th St., Norfolk, Va., **Clyde Mims & Assoc.,** P. O. Box 2692, Myrtle Beach, S. C., **Mr. S. C. Stockdale,** Stockdale Corp., 1032 Boulevard N. E., Atlanta, Ga., **Frank Moos,** 5709 Taliaferro St., P. O. Box 8391, Tampa 4, Fla., **I. Stephen Warner,** 1770 Rousslin Drive, New Orleans, La.

The Magazine for Southern Electrical Men Is

ELECTRICAL SOUTH

✦

MAKE USE of our READER SERVICE

The editorial and business staff of **Electrical South** is eager to serve you. One way in which we can help you is to make it easy for you to draw upon the wealth of technical and promotional material available from manufacturers.

In the accompanying pages are the descriptions of scores of useful catalogs, application information booklets, and technical publications. These are available without charge.

Check over the list of publications available, circle the numbers of the ones you need, and mail the coupon to us with your name, title, company and address plainly written. We will tell each manufacturer to send directly to you the information you want.

Fairbanks, Morse and Co., the officers constitute the executive committee. They were named with seven others to the board of trustees.

Fred H. Strong, Washington, deputy administrator of the Rural Electrification Administration, told the 57 representatives of the four groups at the meeting that the Kentucky council is the 33rd state council organized. He said the R.E.A.'s interest in the council is in their usefulness to rural electric users and American agriculture as a whole.

Others on the program included Dr. Frank J. Welch, dean and director of the University of Kentucky Agricultural Extension Service; J. K. Smith, executive manager of the state association of rural electric cooperatives; E. R. Murphy, farm service director of Kentucky Utilities Co., and Mr. McCabe.

The council plans to develop joint group programs, aid research, conduct market surveys, sales training material and similar farm electric programs.

Arkansas contractors elect new officers

NEW OFFICERS were elected for the Arkansas Chapter of the National Electrical Contractors Association at their recent annual meeting in Little Rock. They are: Lee Harvill, Little Rock, president; Earl Fisk, Little Rock, secretary-manager; Dan Davies, Camden, vice-president; and Joe Ellen, El Dorado, treasurer.

Dormeyer Power Tool Division reps appointed

APPOINTMENT of five manufacturers' representatives for the Southern states has been announced by R. J. Malcomson, Jr., Chicago, sales manager of Dormeyer Corporation's new Power Tool Division.

David Sharf, David Sharf & Associates, 5823 Penn. Ave., Pittsburgh, Pa., will handle the Dormeyer power tool line in the State of West Virginia, plus six counties in Western Pennsylvania.

Frank M. Collins of the Frank M. Collins Co., 31 16th St., N.W., Atlanta, Ga., has the States of Georgia, Tennessee, North Carolina, South Carolina, Alabama and Florida.

Al Levin of Al Levin & Associates, Inc., 410 Notre Dame St., New Orleans, will handle the Dormeyer power tools in Louisiana and Mississippi.

Harry Hanser of the Harry Hanser Organization, 1841 Broadway, New York, N. Y., will handle the line in New York State, New Jersey, Vermont, Connecticut, Maryland, Virginia, the District of Columbia and eight counties in Eastern Pennsylvania.

Earl J. Goetze of the Earl Goetze Co., 2205 Grand Ave., Kansas City, Mo., will represent the Dormeyer power tool line in Nebraska, Kansas, Oklahoma and Iowa, plus Western Missouri, and Rock Island, Ill.

Electrical Wholesalers get Westinghouse lines

ELECTRICAL WHOLESALERS, INC., Atlanta, Ga., has been appointed agent-distributor for the sale of Westinghouse apparatus and lighting products, according to announcement of O. O. Rae, vice-president of Westinghouse Electric Corp.

Electrical Wholesalers, Inc., has been identified with the wholesale electrical distribution industry since March 15, 1937. Main office and warehouse of the company is located at 229 Whitehall St., S. W., and a branch warehouse is maintained at 641 Stewart Ave., S. W.,

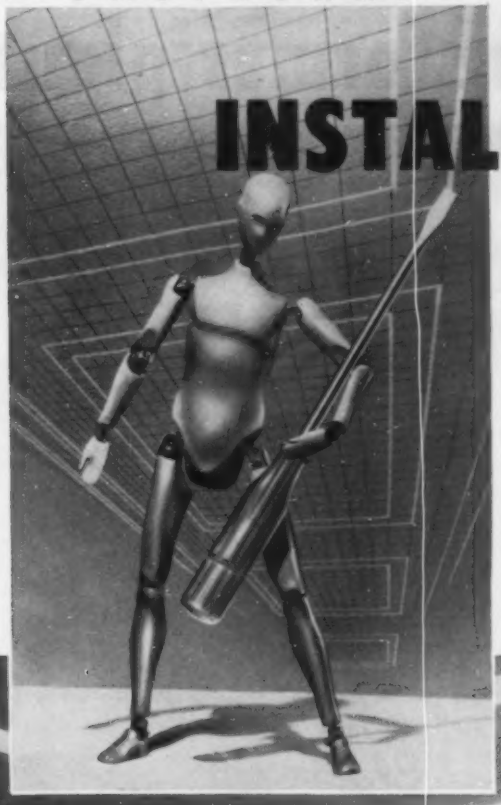
10 Seconds Of Time Might Save A Good Job

SEE PAGE 31

ACCURATE

NEW SMITHCRAFT TROFFERS FEATURE

ROCK-BOTTOM INSTALLATION COSTS!



Only tool need is a screwdriver for final adjustment. No exact positioning required. Minimum number of parts and assembly on the job. Maximum simple adjustability at every critical point. Adaptable to most ceilings with a single, easy-to-install clip; provision for simple adaptability to all other ceilings. These new features save hours and dollars for you. And the Smithcraft Troffer installations you make mean more business for you. The new Smithcraft Troffer presents a clean, trim, uncluttered appearance because for the first time in the troffer lighting there are no visible catches, latches, bolts or screws. Perfectly straight, trim, in-line rows free from light leaks or blemishes. Here at last is a troffer that meets the contractor's every troffer need.

This mounting bracket with simple clip attachments adapts the Smithcraft Troffer to a great majority of the ceilings in use today.

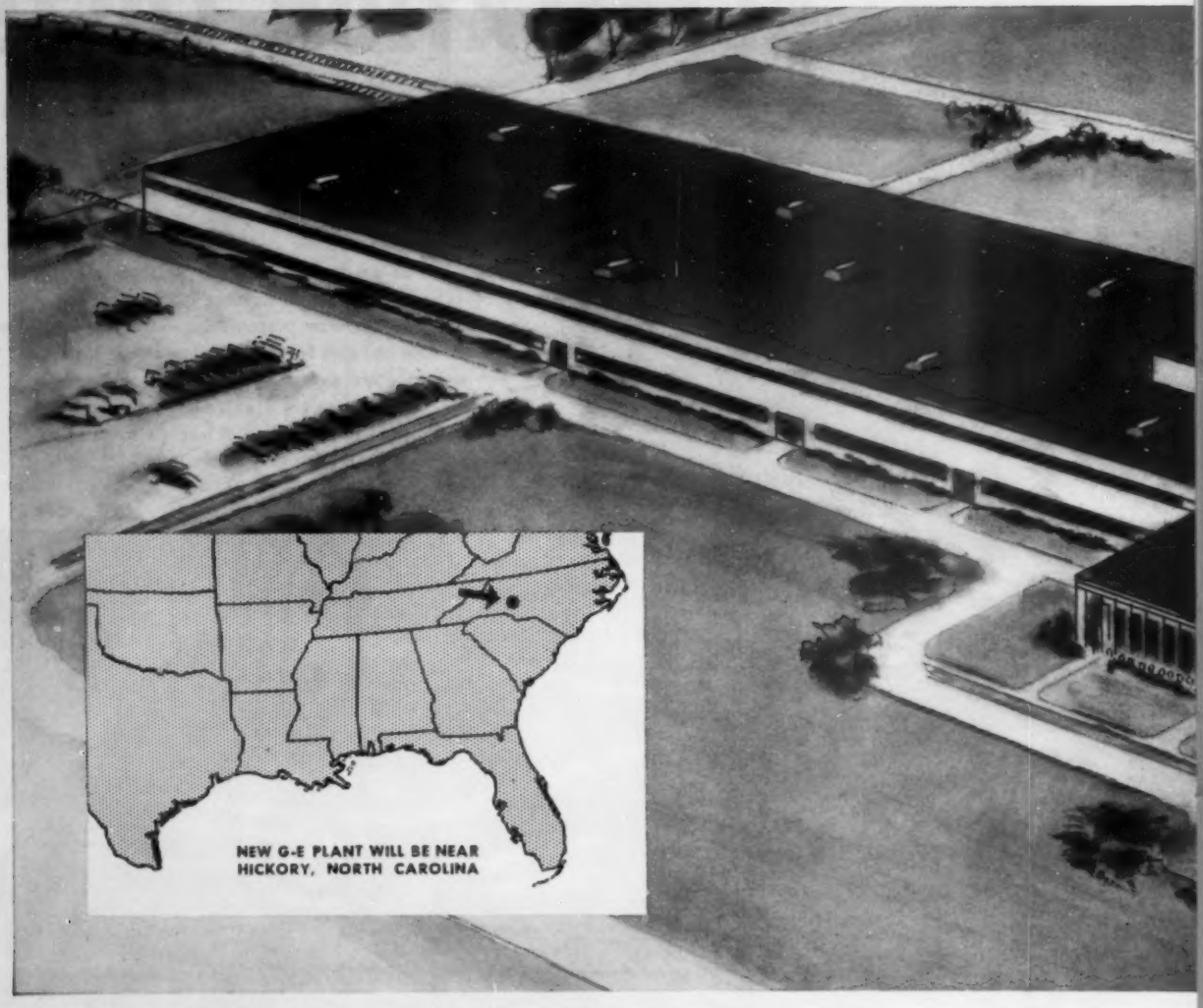
The new Smithcraft troffer-in-plaster frame method assures perfectly square plastered openings and is unbelievably simple to install.

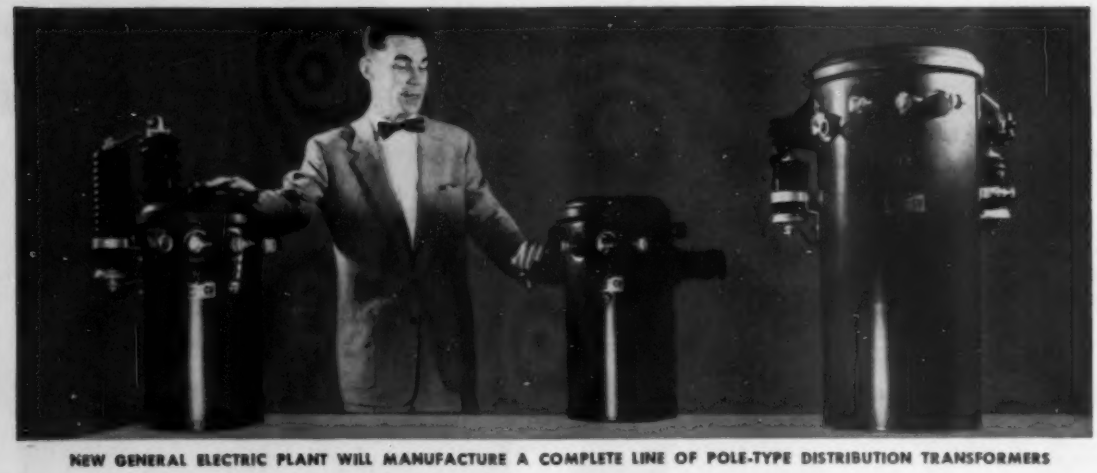
Write today for the new Smithcraft Troffer Book illustrating and describing the new Smithcraft Troffers in detail.

Door frame containing glass, plastic or lens instantly opens or closes by simple pressure upwards.
In louvered units, louvers hinge from either side and are removed without tools or loose parts.
Smithcraft
LIGHTING DIVISION
CHELSEA 50, MASSACHUSETTS

"BUY LIGHTING" — NOT FIXTURES — INVEST IN AMERICA'S FINEST FLUORESCENT LIGHTING

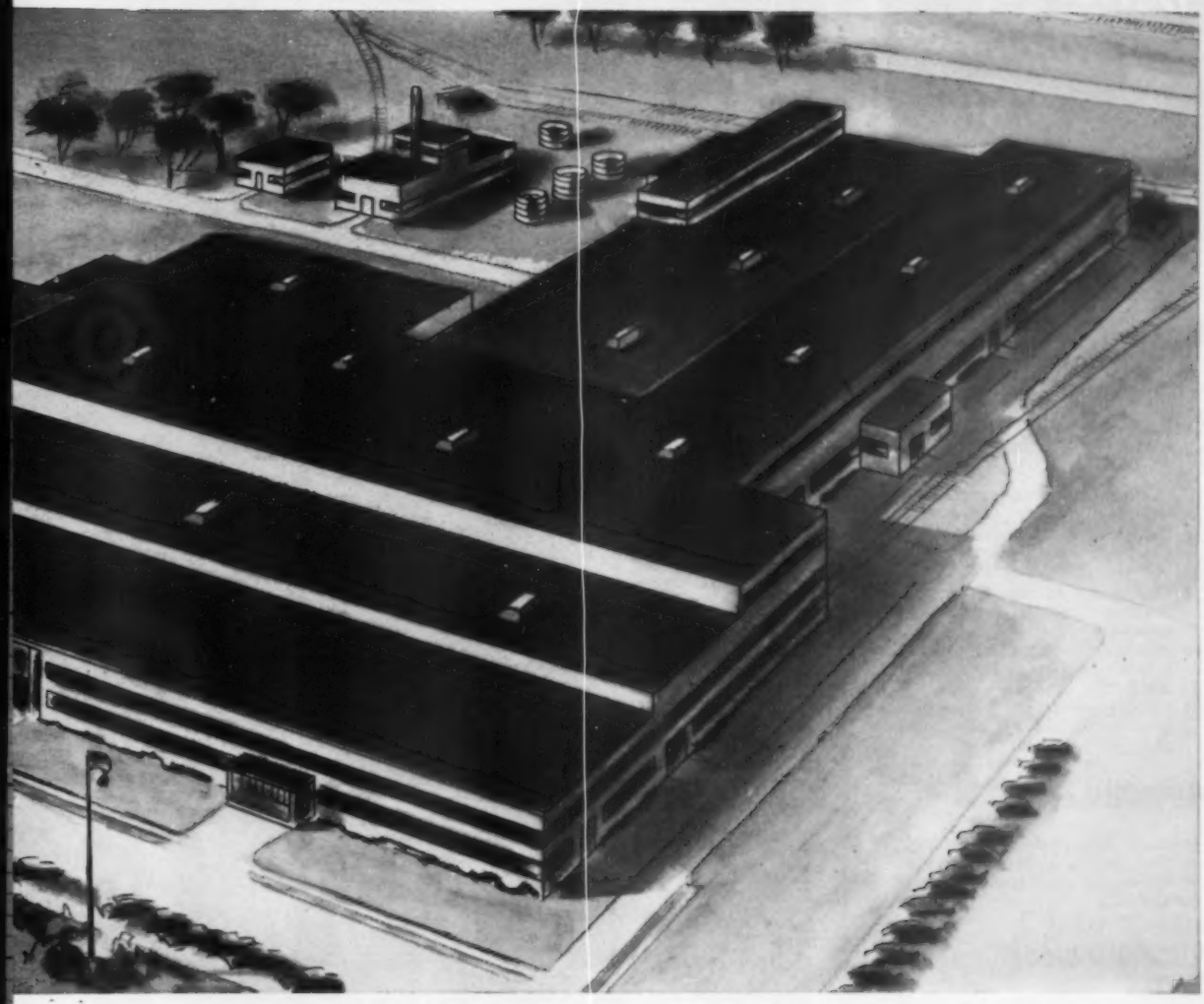
Another G-E transformer plant





NEW GENERAL ELECTRIC PLANT WILL MANUFACTURE A COMPLETE LINE OF POLE-TYPE DISTRIBUTION TRANSFORMERS

to serve the booming South



NEW TWENTY-MILLION-DOLLAR DISTRIBUTION TRANSFORMER PLANT TO BE BUILT IN HICKORY-NEWTON-CONOVER AREA OF NORTH CAROLINA

Located in the foothills of the Piedmont Range within 100 miles of Charlotte, this new General Electric plant is scheduled for completion late in 1956 and will eventually employ over eleven hundred people. The second major G-E transformer expansion into the South—General Electric's Medium Transformer Plant in Rome, Georgia, was opened in May, 1954—this new plant will build distribution transformers for electric utility and industrial use. It should enable General Electric to better serve your growing electrical needs. General Electric Company, Schenectady 5, New York. 431-29

Progress Is Our Most Important Product

GENERAL ELECTRIC

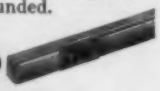
Contractors get
Better Business
at a *profit*
with Plugmold
by WIREMOLD

PLUGMOLD 2000

A versatile, easy-to-install outlet system with many advantages:

- Available in Snapicoil . . . no need for multiple connections between short lengths.
- No special fittings needed for feeding. Plenty of room to spin a locknut.
- Provides duplex 3-wire receptacles with one side switched AND one side hot.
- *1* size raceway for *3* services—2-wire duplex, 3-wire duplex, and NEMA grounded.

PLUGMOLD 1900



Small cross section multi-outlet system available three ways — unwired, wired sections, and Snapicoil.

PLUGMOLD 2100

A larger raceway for applications where more than one or two circuits are required. Available unwired for wiring in the field.

Fluorescent and Slimline Units

Small cross section makes Wiremold units ideal for cove, cornice, valance, and luminous ceiling applications.

Plug Plugmold and Win Prizes!
Prizes on Fluorescent Units, TOO

For complete information Write Dept. L3

THE WIREMOLD COMPANY
Hartford 10, Connecticut

comprising a total of 39,000 square feet.

F. H. Dendy is president of the company and Fred H. Dendy, Jr., executive vice-president.

Southeastern metermen to hold short course

A METER SHORT COURSE, sponsored by the Southeastern Metermen's Association, has been scheduled for the University of Florida, Gainesville, Fla., April 4-8, 1955, according to a recent announcement by H. B. Edmonds, secretary-treasurer of the association.

The course will be under the direction of Professor E. F. Smith of the University's Electrical Engineering Department.

Further information is available by writing Mr. Edmonds in care of the Duke Power Co., Anderson, S. C.

Reorganization of G-E Lamp Division announced

COMPLETE REORGANIZATION of the Lamp Division of the General Electric Co., Cleveland, Ohio, was announced recently by Donald L. Millham, G-E vice-president and general manager of the division.

The reorganization involves decentralization of the division by the creation of six product or business departments, each headed by a general manager, and a complete business organization of itself, and an Advanced Lamp Development Laboratory. Two service departments, now in existence, complete the organization.

The new product departments and their general managers are: Large Lamp Department, Herman L. Weiss; Miniature Lamp Department, Kenneth G. Reider; Photo Lamp Department, William E. Davidson; Lamp Glass Department, Ernest A. Howard; Lamp Wire and Phosphor Department, Robert F. Johnson; Lamp Leads and Bases Department, Walter P. Cartun.

Carl L. Olson will be manager of the newly created laboratory, which will devote its efforts to basic research as distinguished from product development. The new laboratory will be concerned with "the creation, use, and effects of light, and the use and effect of new processes, new materials, and new manufacturing and engineering techniques in all the businesses constituting the division," Mr. Millham said.

All product departments and the new laboratory will have their headquarters at Nela Park.

Two of the existing service organizations have not been absorbed into the new operating departments. They are the Legal Department, with Douglas S. Moore as counsel, and the Lamp Equipment Operation, formerly the Cleveland Equipment Works, with William R. Gerow as manager.

Pictured here are Donald L. Millham, General Electric vice-president and general manager of the Lamp Division, and general managers of the six product departments. Seated beside Mr. Millham, at left, are Robert F. Johnson, Ernest A. Howard, and Herman L. Weiss. Standing, left to right, are Walter P. Cartun, Kenneth G. Reider and William E. Davidson.

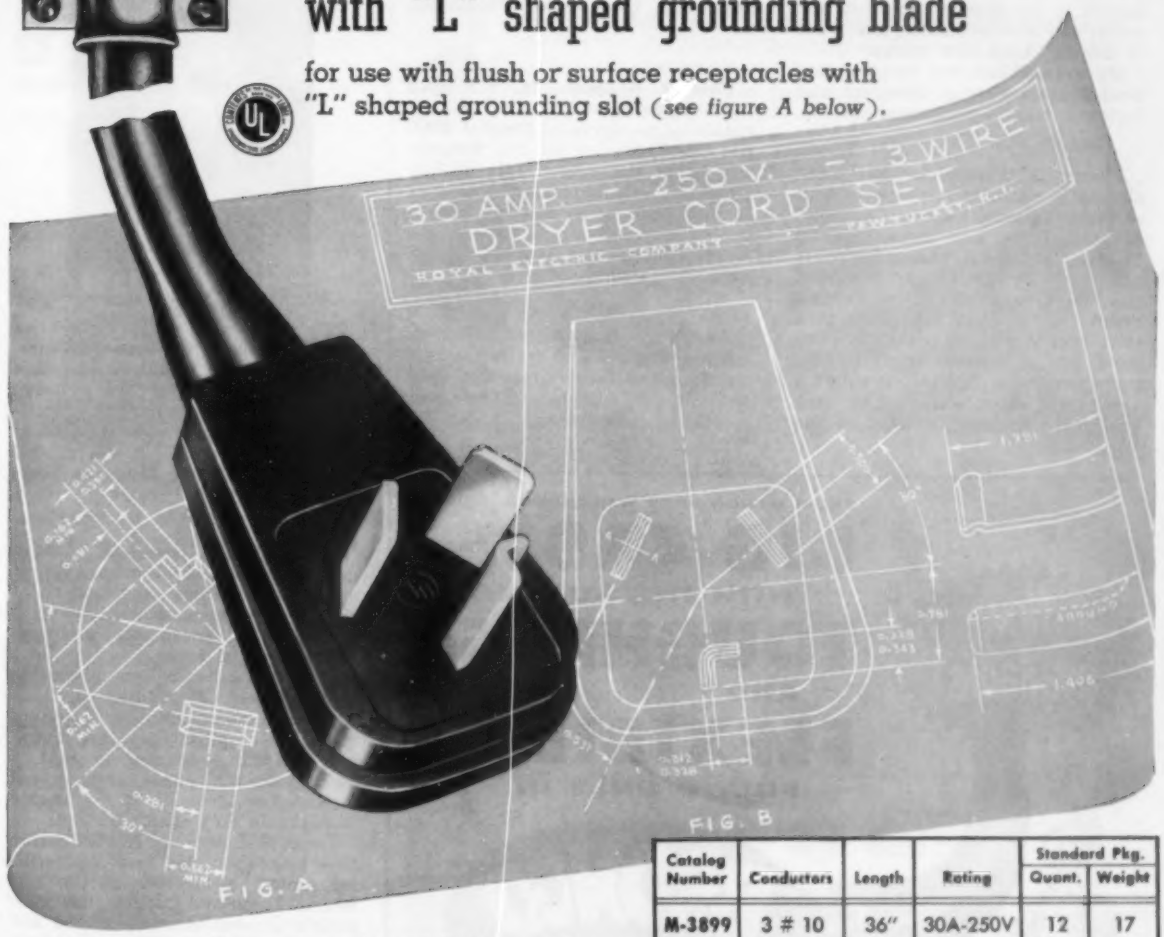
Safety...economy...dependability

are molded into ROYAL

DRYER CORD SETS

with "L" shaped grounding blade

for use with flush or surface receptacles with "L" shaped grounding slot (*see figure A below*).



Catalog Number	Conductors	Length	Rating	Standard Pkg. Quant.	Standard Pkg. Weight
M-3899	3 # 10	36"	30A-250V	12	17
M-3900	3 # 10	48"	30A-250V	10	17
M-3901	3 # 10	60"	30A-250V	8	18
M-3902	3 # 10	72"	30A-250V	6	17

Here's a new cord set engineered especially for use with dryers and other appliances and equipment which require only 30-Amp service under NEMA standards and the new UL code.

This new molded, all-rubber Royal cord set has the same quality characteristics of Royal Range Cord Sets, "POWR-KORDS", and the full Royal molded cord line . . . the kind of quality which always assures complete dependability and satisfaction to you and your customer.

buy ROYAL... you'll sell better!

ROYAL ELECTRIC COMPANY, Inc.
Makers of WIRE • CORD SETS • FUSES

ROYAL

PAWTUCKET, RHODE ISLAND
WIRING DEVICES • CHRISTMAS "ROYALITES"

News about people

Frank Rosen, founder of **Progress Manufacturing Co., Inc.,** Philadelphia, Pa., passed away on December 21, 1954, at the age of 67. He had been in retirement for the past five years.

Mr. Rosen, who established Progress in 1929, was well known in the lighting industry, and was also well known in the sporting world as the owner of Palatine Stables, developer of thoroughbred race horses.

His sons, Ruben and Maurice now head the company as president and secretary-treasurer, respectively.

Pierce G. Fredericks has been elected a commercial vice-president of **Federal Pacific Electric Co.,** Newark, N. J., it was announced by **Thomas M. Cole,** executive vice-president. Mr. Fredericks has been closely associated with Federal Pacific for the past 15 years as a sales representative, selling a complete line of outdoor high tension transmission equipment including apparatus manufactured by the Pacific Switchgear Division of the company. Mr. Fredericks will continue to maintain offices at 90 West St., New York City.

Previous to establishing his own sales agency, Mr. Fredericks was engaged in power plant engineering and construction work for the Associated Gas and Electric Co., now Gilbert Associates, Inc., and Public Service of New Jersey Production Co.

Paul M. Simpson, Jr., 715 Byrd Park Ct., Richmond 20, Va., has been appointed to represent **Simplet Electric Co.,** Sycamore, Ill. Mr. Simpson will cover the entire State of Virginia for Simplet, manufacturers of conduit fittings and devices, according to a recent announcement by **J. M. Elliott,** the company's merchandising manager.

Joseph S. Buchsbaum has been appointed general sales manager of the **Standard Transformer Co.,** Warren, Ohio. Mr. Buchsbaum has been associated with Standard for the past 12 years as sales promotion and advertising manager.

Prior to joining the Warren firm, Mr. Buchsbaum was affiliated with the Ohio Public Service Co., now Ohio Edison, for 20 years.

Robert D. Van Valin has been appointed Texas sales representative for **Southwire Co.,** Carrollton, Ga.

Earl Haynes, sales manager for Southwire, said that Mr. Van Valin

R. D. Van Valin

will travel the entire state of Texas.

A native of California, Mr. Van Valin is a graduate of Georgia Tech, holding a degree in Industrial Management. He has served two tours of duty with the U. S. Navy, and was formerly in the insurance business in Honolulu.

L. P. Sweatt, president of **Mississippi Power Co.,** following a recent meeting of the company's board of directors, has announced several executive advancements and reassignments of duties.

S. L. Muths has become executive vice-president. Mr. Muths has been with the company since its beginning in 1925, was made operating manager in 1935, a director in 1942, a vice-president in 1949, and general manager in 1950. He is a graduate of Alabama Polytechnic Institute.

James S. Eaton and **R. M. Shearer** have been appointed vice-presidents. Mr. Eaton, a member of the law firm of Eaton and Cottrell, the company's general counsel, is the son of Mississippi Power's first president, Barney E. Eaton, now deceased. Following graduation from Vanderbilt University and the Law School of the University of Mississippi, he became a member of his father's law firm, which also was general counsel for Mississippi Power Co. Mr. Shearer, formerly commercial manager, came with the company when it began operations in 1925. He is a graduate of Bucknell University.

A. J. Watson, formerly operating manager, has become general manager, and **W. J. Carr,** former assistant operating manager, has become operating manager. Mr. Watson has

FROM NATION-WIDE WAREHOUSE STOCKS*

Now available!

BIG CABLES WITH THE SUPERB TOUGHNESS AND FLEXIBILITY FOUND ONLY IN

BRONCO Certified 60

Bronco 60 Certified Type W cables are made in all sizes from 8/2 to 1/4. They have a tough Neoprene jacket certified by a registered professional engineer to contain not less than 65.46% Neoprene. Made with coarse or fine stranding for incomparable flexibility.

Sold nationally only through Electrical Wholesale Distributors and manufactured by

WESTERN INSULATED WIRE CO., Los Angeles 58, California

Warehouse Stocks Maintained in the Following Cities: ATLANTA, GEORGIA • BALTIMORE, MARYLAND • BOSTON, MASSACHUSETTS • BUFFALO, NEW YORK • CHICAGO, ILLINOIS • DETROIT, MICHIGAN • KANSAS CITY, MISSOURI • LOS ANGELES, CALIFORNIA • LOUISVILLE, KENTUCKY • MINNEAPOLIS, MINNESOTA • NEW YORK, N. Y. • PHILADELPHIA, PENN. • SAN FRANCISCO, CALIFORNIA • SEATTLE, WASHINGTON

been with the company since his graduation from Mississippi State College in 1930. He became operating manager in 1950. Mr. Carr, a graduate of Alabama Polytechnic Institute, has been with the company since it began operations in the state in 1925.

David A. Hinton has been named manager of the **Wire and Cable Department, National Electric Products Corp.,** according to an announcement by **Robert C. Bennett, Jr.,** vice-president in charge of sales for the Pittsburgh, Pa., firm.

In his new position, Mr. Hinton will be responsible for the co-ordination of all wire and cable sales efforts with sales personnel and the

David A. Hinton

company's design and production departments. He will also be charged with sales planning for new products introduced in National Electric's wire and cable lines.

Mr. Hinton previously had been in charge of National Electric's Underwriters' Laboratories contacts, and had represented the firm in its technical activities with the National Electrical Manufacturers Association.

Prior to joining National Electric in 1936, Mr. Hinton had worked for Bell Telephone and General Motors.

The Kerite Co., New York, N. Y., and Seymour, Conn., manufacturers of insulated wire and cable, has announced that **Theodore O. Rudd** has succeeded **C. R. R. Harris** as president of the century-old company. Mr. Harris becomes chairman of the board and chief executive officer. He also retains his post as treasurer. Both men were elected to their new positions at a recent meeting of the board of directors.

Election of Mr. Rudd as president climaxes 28 years of association with Kerite. Mr. Rudd joined the company in January 1926 as sales engineer and assistant to Col. Azel Ames. He was promoted to a department manager in 1941; to vice-president on January 1, 1945; and made a director in April 1946.

Mr. Harris joined Kerite in 1917

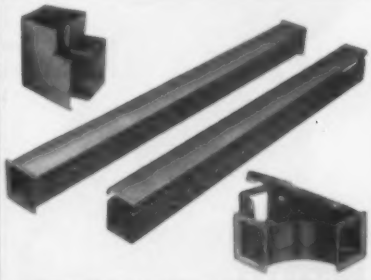
You can get WHAT you want
WHEN you want it from the

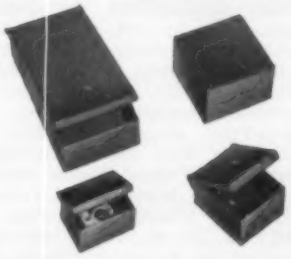
KEYSTONE QUALITY LINE

WIREWAYS AND FITTINGS · CUTOUT AND PULL BOXES
SWITCH BOXES · OUTLET BOXES · BAR HANGERS

SERVICE is the "keynote" at Keystone! And one good example is the fact that *every* item in the complete Keystone Line is stocked for *immediate shipment* . . . direct to you . . . to or through your local electrical distributor. No delays on the job, no partial deliveries! You'll find, too, that every item is priced right . . . quality-built to save time, reduce costs, increase your profits per job!

KEYSTONE WIREWAYS and Auxiliary Fittings have all the time-saving, money-saving features your customers want. They're quickly, easily installed, readily adaptable to any power distribution system. Available, too, in both flanged and flangeless styles and a wide range of sizes and lengths . . . from 2½" x 2½" x 1 ft. through 8" x 8" x 5 feet long.

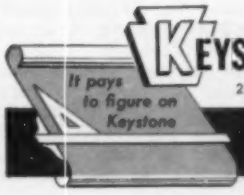




KEYSTONE CUTOUT BOXES and Pull Boxes are furnished in Type "A" with hinged cover, Type "SC" with screw cover. Both feature a formed construction strongly fabricated and securely welded . . . with adequate, easily removable knockouts. And both types are available in a complete range of sizes . . . stocked for prompt delivery to meet your needs.

KEYSTONE SWITCH BOXES and Outlet Boxes are loaded with extra quality features! BX or Romex clamps are already assembled with nested fit for easy pulling of wires. Knockouts and pri-outs come out double quick. And tapped holes are extruded to provide extra thickness, eliminate stripping of threads. Even mounting brackets make installation easier.

New fact-filled, illustrated catalog presents the complete Keystone Quality Line . . . send for your free copy today!



KEYSTONE MANUFACTURING COMPANY
23328 SHERWOOD AVENUE • CENTER LINE (Detroit) MICHIGAN
. . . the Complete Line of Wiring Installation Equipment
Sold Only through recognized Electrical Distributors

PYLE-NATIONAL

STRATELINE
TRADE MARK

Receptacles and Plugs

DELAYED ACTION
EXPLOSION PROOF

...are safe, reliable connectors for portable electrical equipment in hazardous locations, (Class I, groups C and D) and also are safe and positive current rupturing devices.

The delayed action lock, which is extremely easy and simple to operate, makes it impossible to open or close the circuit except when the contacts are safely confined within the explosion-proof chamber. Pressing a conveniently-located button is all that is necessary to release the delayed action lock. The plug is inserted and withdrawn in a straight line. No turning is necessary. No separate sealing fittings are required. For 15 and 30 ampere, 2-wire, 3-pole and 3-wire, 4-pole circuits.

Sold nationally through electrical distributors. Write for detailed literature.

THE PYLE-NATIONAL COMPANY
1354 NORTH KOSTNER AVENUE
CHICAGO 51, ILLINOIS
CONDUIT FITTINGS • FLOODLIGHTS

as a supervising engineer, bringing to this position the experience he had gained from the Western Electric Co., and the Western Union Telegraph Co. He was elected president of the company in 1943.

The election of **William M. Stark** as commercial vice-president of **Federal Pacific Electric Co.**, Newark, N. J., has been announced by **Thomas M. Cole**, executive vice-president. In addition to his new responsibilities, Mr. Stark will continue in his present capacity as manager of Federal Pacific's Central sales region.

W. M. Stark

His offices are located at regional headquarters in St. Louis, Mo.

Mr. Stark joined the Federal organization in 1944, when Federal purchased the Johns-Pratt Division of the Colt Patent Firearms Manufacturing Co. Mr. Stark had been an electrical specialty salesman for Johns-Pratt since 1920. Thus his association with the Noark trademark, with Federal Pacific and its predecessors, dates back 35 years.

Prior to joining Johns-Pratt in 1920, Mr. Stark was a specialty salesman for Reichman Crosby Co., Westinghouse agent jobbers in Memphis, Tenn. He was graduated in 1916 from Mississippi State College, where he received a B. S. in electrical engineering.

The appointment of **W. E. James** as Richmond District sales manager was announced recently by **Willard E. Henges**, president of **Graybar Electric Co., Inc.**

Graybar's Richmond District covers 47 counties of Virginia and the entire State of North Carolina. Branches at Charlotte, N. C., Asheville, N. C., Durham, N. C., Norfolk, Va., Roanoke, Va., Winston-Salem, N. C., and Rocky Mount, N. C., are supervised by Richmond.

Mr. James has completed 33 years with Graybar starting as a warehouseman at Norfolk. In 1923, he became service supervisor and, in 1924, supply salesman covering Western Virginia. In 1928, he was

Easy to slice costs with . . .

NO-KLIK®
QUIET SWITCHES

No. 3401 Bakelite — A.C. Only — Silver Contacts. Quiet Operation Without Mercury or Other Fluids. Not Down Rated. Lifetime Performance. L Rated (T rating for A.C. Switches). Operates in any position for both Incandescent (Non-inductive) and Fluorescent (Inductive) lamp loads. Back or side wiring; strip gage. Approved for control of Fluorescent Lamps on A-C circuits of 277 Volts and less, and for motor loads up to 277 Volts at 80% of current rating of the switch. Totally enclosed mechanism with large head No. 8 binding screws. Takes any wire size up to No. 10. 15 AMPS.—120 to 277V., A-C only.

Rear View #3401 (Showing Back Wiring and Strip Gage)

No. 3421 20 AMP. SWITCH. Identified by Red Moulded Cover. Approved for control of Fluorescent Lamps on A-C circuits of 277 Volts and less and for motor loads up to 277 Volts at 80% of current rating of the switch. 20 AMPS.—120 to 277V., A-C only.

50 YEARS

CIRCLE F MFG CO.
TRENTON 4, NEW JERSEY

made manager of the new Roanoke house. He was born in Princess Anne County, Virginia and was educated in the Norfolk public schools and Virginia Polytechnic Institute.

Lester R. Crane has been named sales manager of distribution equipment at **Anderson Brass Works, Inc.,** Birmingham, Ala. He has been associated with the A. B. Chance Company for the past seven years in various managerial positions in the field and at their head office. For

L. R. Crane

the last four years he has been their manager of sales for switchgear.

Prior to his association with A. B. Chance, he was with the Westinghouse Electric Corp., at Pittsburgh, Pa., for seven years as a switchgear application engineer. Mr. Crane received both his B.S. and M.S. degrees in Electrical Engineering at North Carolina State College.

Samuel M. Sharp, vice-president and chief engineer of the **Southwestern Gas and Electric Co.,** Shreveport, La., has been elected a member of the company's board of directors, succeeding **Marshall T. Walker,** who has retired.

Mr. Walker's resignation from the board of directors brought to a close 56 years of active association in the utility industry, including 31 years service on Southwestern's board.

A native of Alma, Ark., Mr. Sharp received his BS degree in electrical engineering at the University of Arkansas. He first became associated with Southwestern in 1932 when he was named Louisiana division engineer.

William T. Johns, Jr., vice-president, **Rumsey Electric Co.,** Philadelphia, has been elected a director of the corporation, according to an announcement by **J. B. Harris, Jr.,** Rumsey president.

Mr. Johns, a native of Richmond, Va., and a graduate of Virginia

BEWARE
THE BULBEAR

The unbearable Bulbear has a ravenous appetite for expensive "juice". He lurks around plants that are careless about lamp maintenance* and he takes a healthy bite out of working efficiency unless you are careful to keep amply supplied with high quality, long-lasting

CHAMPION Lamps

* *The Champion Maintenance Manual is full of simple, sensible suggestions on how to make the most of your lighting and lamps. May we mail you a copy?*

CHAMPION LAMP WORKS
320 Lynnway, Lynn, Massachusetts

Polytechnic Institute, joined Rumsey in 1929, serving as Richmond district manager and regional manager, before being appointed vice-president in 1951. He will continue to make his headquarters in Richmond.

The Rumsey Company serves as representatives for several electrical manufacturers, including Allis-Chalmers Mfg. Co., Delta-Star Electric Co., Lapp Insulator Co., and Sangamo Electric Co.

Ernest W. Davis, director of engineering for the **Simplex Wire & Cable Co.,** Cambridge, Mass., died on January 11, 1955, of a heart attack. An MIT graduate, he joined Simplex's Engineering Department in 1913. From then until 1932, he was assistant electrical engineer. Subsequent to that he was promoted to chief electrical engineer, and chief engineer. In 1950, he was named director of engineering.

Mr. Davis was a Fellow of the American Institute of Electrical Engineers and served that organization in many capacities, the last being as a member of the board of examiners. In addition to his contributions to AIEE, Mr. Davis was also president of the Insulated Power Cable Engineers Association at the time of his death.

Free bulletins

available to our readers

A 20-page, three color booklet on a new line of **enclosed fuse cutouts** is now available from the **General Electric Co.,** Schenectady 5, N. Y.

Designated GEA-6208, the publication covers design features, application information, technical data, dimensions and ratings. The new line includes 50 ampere and 100 ampere cutouts in 5.2 kv and 7.8 kv ratings.

The publication on the cutouts explains how flexibility is accomplished with one housing and four interchangeable doors in each voltage and current rating.

For your free copy, circle number B301 *on the coupon on page* 100.

T. J. Cope, Inc., 711 S. 50th St., Philadelphia 43, Pa., has announced the development of a new 70,000 Series of Cope Standard Cable Trough with a Pin Type Coupler, and has made available a new 16-page catalog describing and illustrating this series.

The new 70,000 Series trough is constructed with built-in pin type couplers at each opening which permit sections to be permanently and securely joined in a matter of seconds and will be sold in lengths of 8, 10 and 12 feet. Conservative estimates indicate that savings in field assembly time from 70 to 80 per cent are possible. All fittings such as tees, elbows, risers, etc. are also equipped with the new 70,000 Series Pin Type Coupler which permits entire trough systems to be rapidly assembled at job sites to conform to any plant layout.

For your free copy, circle number B302 *on the coupon on page* 100.

A new pocket-sized catalog, Bulletin B-5799-B, of **fluorescent luminaires for commercial and industrial use** is now available from the **Westinghouse Electric Corp.,** P. O. Box 2099, Pittsburgh 30, Pa. Only 28 pages long, the booklet concisely summarizes salient features of each type of luminaire as it discusses electrical characteristics, maintenance and mounting data, details of construction, dimensions, and recommendations for application.

In addition, the booklet contains a pictorial guide to floodlights and incandescent luminaires for commercial or industrial use.

A four-page tabulation of buying data concentrates in one place all information needed for luminaire procurement.

For your free copy, circle number B303 *on the coupon on page* 100.

The Electrical Division of **McGill Manufacturing Co., Inc.,** of Valparaiso, Ind., has released an eight-page bulletin (No. 154) describing the firm's complete line of brass and phenolic lampholders.

Pictures, copy and charts give detailed information on brass and phenolic models. These include single-circuit and two-circuit lampholders with pull chain, push button and universal lever control.

For your free copy, circle number B304 *on the coupon on page* 100.

The many recent developments in the Burndy Crimpit line of **compression connectors for overhead distribution connections** are included in the new 27-page Crimpit Bulletin CR-1 published by **Burndy Engineering Co., Inc.,** Norwalk, Conn. This new bulletin provides the latest information on the entire Crimpit connector line for all overhead distribution applications, including aluminum triplex service connectors.

A six-page introduction, detailing

The "NOB"ILITY of STAPLES

INDENTED HEAD KEEPS HAMMER OFF CABLE

HARDENED SEMI-FLAT LEGS DRIVE STRAIGHT HOLD BETTER

No. 125

NO BARS—NO BURRS TO INJURE N.M.C.

There Is A Difference

STOCKED BY ALL LEADING ELECTRICAL SUPPLIERS

W. W. CROSS & CO., INC. – JAFFREY, N. H.

FASTENERS SINCE 1869

GENERAL SALES AGENTS

J. J. WALSH and COMPANY – GREENVILLE, R. I.

the Crimpit technique, comprehensively reviews technical data on test results, copper-to-aluminum connections, aluminum oxide-inhibiting compounds, and Crimpit installation tooling.

An eight-page section is devoted to detailed information on mechanical and hydraulic installation tooling and accessories used with the various Crimpit line designs. The newly developed Burndy Hytool MD-3, and the Burndy Hypresses Y33RK and Y35 are fully described.

For your free copy, circle number B305 *on the coupon on page* 100.

A new 16-page illustrated bulletin (No. 551-5) on **mercury lamp street lighting** has been published by the **Jefferson Electric Co.**, Bellwood, Ill.

The bulletin contains general information, lamp data, diagrams and illustrations on transformers for both multiple and series circuits. Along with installation data, the catalog features complete information on Jefferson's line of "constant wattage" transformers—units which make sure the high intensity mercury lamp receives the same amount of wattage, despite wide fluctuations in line voltage.

For your free copy, circle number B306 *on the coupon on page* 100.

A new bulletin giving design, construction features and general dimensions of Allis-Chalmers **three-pole non-automatic subway oil switches** used for sectionalizing lines, switching of transformers, or similar services, has been released by the company.

Two types of switches are described—Type M-25, rated 300 amperes, 5,000 volts, and Type M-50, rated 400 amperes, 7,500 volts. The switches are available with either single or multiconductor cable sleeves and are designed for positive and safe operation without frequent adjustment or inspection.

Copies of the bulletin, "Allis-Chalmers 3-Pole Subway Oil Switches," 71B6101B, are available on request from **Allis-Chalmers Manufacturing Co.**, 938 S. 70th St., Milwaukee, Wis.

For your free copy, circle number B307 *on the coupon on page* 100.

The availability, properties, advantages and methods of joining and bending **aluminum electrical bus conductors** are detailed in a new brochure published by the Industrial Service Division, **Kaiser Aluminum & Chemical Corp.**, 1924 Broadway, Oakland 12, Calif.

The 12-page publication—prepared to assist manufacturers, utilities, architects and engineers in converting to aluminum bus—covers rectangular bar, tubular conductor and solid round bar.

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SELL CAVALIER ELECTRIC HEATERS AT THE SAME TIME You Sell Your Services and

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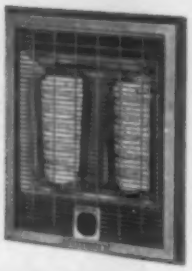
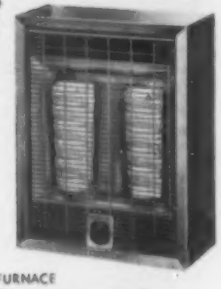
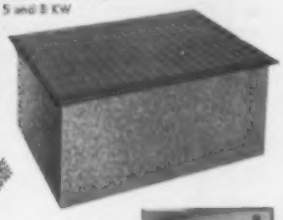


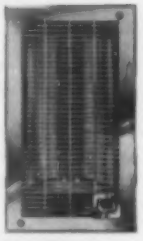
SURFACE MOUNTED 1, 1½, 2, 3 and 4 KW



FLOOR FURNACE 5 and 8 KW



BATHROOM CW-1.5-C 1.5 KW



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Big ads in magazines that builders and future home-owners really read. By selling clean, convenient automatic Cavalier electric heat they sell more business for you. For new construction or modernizing, Cavalier electric heat finds ready acceptance as the modern way to comfort.

THIS COUPON IS VALUABLE

Ask your distributor how it works to tie-in your advertising with Cavalier's powerful promotion. See your catalog for free ad material or write

CAVALIER CORPORATION
ELECTRIC HEATING DIVISION
CHATTANOOGA 2, TENNESSEE

Specifically, the booklet contains conveniently tabulated information on thermal, electrical and physical properties, dimensions, weights and tolerances for the large range of shapes, alloys and sizes of bus conductors available from Kaiser Aluminum.

For your free copy, circle number B308 *on the coupon on page* 100.

A newly revised and enlarged, free 32-page catalog that has descriptive information, photos, prices, and ordering data on **electrical insulating materials** is available from the Publication Dept., **Insulation Manufacturers Corp.**, 565 W. Washington Blvd., Chicago 6, Ill.

Repair shops and maintenance departments will find this catalog a complete source for the electrical insulations they need. A table of contents and an alphabetical product index are quick guides to: cords and twines, woven tapes, tubings and sleevings, mica plates, slot wedges, varnishes, solvents, filling compound, "Mylar"-rag paper combinations, paper, vulcanized fibre, slot insulation, the INMANCO Creaser-Cutters, fibre washers, varnished fabrics, and others.

For your free copy, circle number B309 *on the coupon on page* 100.

New products

(For more information, use coupon on page 100)

Packaged components offered by Square D

SQUARE D Co., 4041 N. Richards St., Milwaukee 12, Wis., is now packaging motor starter modification and replacement components, thus making them easily available through a nationwide network of electrical distributors. Standard motor starters become much more flexible since modification is simplified through easy identification and availability of needed parts. The cover mounted pushbutton (illustrated) is typical. Other attractively packaged components include selector switches, interlocks, overload relays, coils and repair parts.

The new pushbutton and selector switch kits are furnished complete with the control unit, hardware and complete instructions for mounting in the starter cover. After removal of a knockout, the pushbutton or selector switch can be quickly attached and wired to the starter.

Kits for front mounting of extra electrical interlocks are also a complete package consisting of the interlocking unit, mounting hardware and instructions. Normally-open, normally-closed or double circuit, normally-open and normally-closed interlocks can be quickly and easily added to a standard starter to meet almost every special requirement.

Other packaged parts kits of replacement contacts, magnet coils and overload relay units greatly simplify normal maintenance.

For additional data, circle item 310 *on the handy coupon on page* 100.

Sunwarm Comfort-Ease features cup, diaphragm

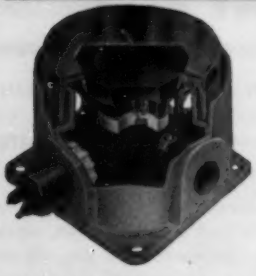
THE COMFORT-EASE, a thermostat designed for electric resistance heating, has been introduced by Sunwarm, Inc., P. O. Box 263, Kingsport, Tenn., manufacturers of Sunwarm electric radiant heating cables.

Utilizing a hydraulic action element, the Comfort-Ease features a

cup and diaphragm directly exposed to the air and to the radiant effects of panel heat. Highly sensitive in nature, the Comfort-Ease maintains a desired balance between air temperature and surface temperature,

Latrobe PRODUCTS

FLOOR BOXES • WIRING SPECIALTIES



Our adjustable Floor Boxes are always equipped with adjusting screws which serve to hold the adjusting ring in line with floor level before the cement has been poured.

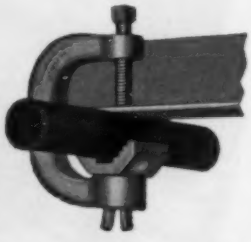
Adjustable Watertight Floor Boxes

All adjustable boxes are now equipped with a positive bond which makes them completely fire-proof.

Pipe or Conduit Hanger

The most economical and best pipe hanger sold today—rust-proof.

For hanging pipe ½" to 1½" thick to steel beams ⅜" thick.



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allowing one to drop as the other increases, thus maintaining uniform comfort rather than a uniform air temperature.

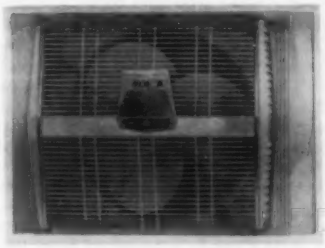
Unlike ordinary thermostats, the Comfort-Ease is not affected by altitude, humidity, or other local conditions. The design of the switch, together with the remarkable sensitivity of the element, combine to give an operating air temperature differential of not more than ½° F. This inherent low differential has the effect of modulating the panel temperature, the average difference between the off and on cycle being about 5° F. This steady panel temperature is of considerable advantage, in that it prevents discomfort caused by changes in the amount of radiant heat supplied to the body.

Operating with equal effectiveness in either mild or severe weather, the Comfort-Ease automatically cycles the heating panel to maintain the desired comfort with maximum economy. The complete unit is regulation size, fitting easily into the standard wall outlet box, with a modern exterior design blending with any wall and room decor.

For additional data, circle item 311 *on the handy coupon on page* 100.

Berns offers push-button reversible ventilator

EQUIPPED with push-button controls, the new 1955 Air King 20-inch electrically reversible window ventilator (AV20PB), recently introduced by Berns Manufacturing Corp., 3050 N. Rockwell, Chicago 18, Ill., now permits easier selection of



six speeds for exhaust and intake. Low speed operates so quietly it does not disturb sleep. High speed cools an entire apartment in just a few minutes. Medium speed gives even, moderate cooling any hour of the day or night.

The scientifically-pitched blades exhaust hot, stale air, smoke and odors — or scoop in cool outside air and send it circulating throughout the entire house.

Designed with adjustable sliding side panels, this new window ventilator will fit practically any window and is completely portable. Handsomely styled in Beigetone finish, it blends with any decor. It is UL approved and has a full five-year

Now you can buy all your fittings from ONE dependable source

2-PIECE E.M.T. CONNECTOR (NO LOCK NUTS)

"DURO" Connectors are approved as Concrete Tight and for General use. (*Rain Tight)

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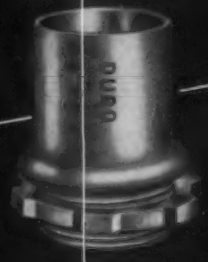

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YOU'LL SAVE YOUR TIME AND MONEY TOO, when you get all your fittings from DURO. Every fitting is tested by our exclusive process and guaranteed to meet the highest standards of perfection. Sold only through qualified wholesalers.

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DURO FITTINGS COMPANY

Multi-Products Manufacturing Co.

LOS ANGELES 21, CALIFORNIA

SLOTTED-NECK construction means cooler lamps—no dirt accumulation — more up-light, less maintenance—better illumination — longer fixture life.

ALL-WHITE ABOLITE reflectors are whiter-than-white, outside as well as inside. They give better illumination, and provide for modern efficient plant appearance.

ABOLITE REFLECTORS

Provide Cooler, Cleaner Light

At no extra cost ALL-WHITE finish SLOTTED-NECK construction can be furnished for all ABOLITE reflectors. SLOTTED-NECK ALL-WHITE features are original ABOLITE developments.

All ABOLITE reflectors feature lifetime enamel permanently bonded to heavy gauge steel. These reflectors are unaffected by weathering, they will not rust, stain or discolor, resist accumulation of dirt and grime, and result in longer fixture life.

ABOLITE LIGHTING DIVISION
The Jones Metal Products Co.
West Lafayette, Ohio

UNDERGROUND WIRING *Simplified*
...Make Short Runs With a – Revere

VAPOR-SEAL JUNCTION BOX

Designed for Safety • Each Run Separately Sealed • Short • Straight Pulls Can Be Made Into The Box • No Vapor Creep

Here's a Junction Box that fills the need for many underground wiring jobs. You can bring all your distant leads to this central point for splicing with wires from the control panel. Each conduit is sealed separately so that vapors cannot creep to switches. Simplifies wiring—Provides safety—Allows for instant accessibility for easy changes.
Write for the Revere catalog today. It's filled with Units that will aid you in your work.

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THE COMPLETE LINE OF FLOODLIGHTS AND POLES FOR SERVICE STATION • SPORTS • AIRPORT • STREET • OUTDOOR THEATRE • MARINE AND INDUSTRIAL LIGHTING

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IS THE ANSWER TO ALL YOUR LIGHTING NEEDS

CLOSED FLOODS FROM 150 to 5000 WATTS

FAMOUS ELIPTOR 300 to 1500 WATT

ENDOVAL & STAR-LUX MERCURY LUMINAIRES

HINGED POLES ORIGINATED BY REVERE

HINGED AND RIGID FLOODLIGHT POLES

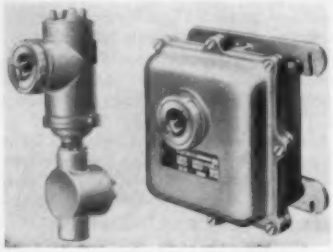
guarantee.

A 16-inch two-speed switch control reversible model, AV16E, is also available. The Berns Air King line includes all purpose fans in 14, 20, and 22-inch models.

For additional data, circle item 312 *on the handy coupon on page* 100.

Crouse-Hinds introduces explosion-proof controls

A NEW SYSTEM of explosion-proof Condulets, consisting of a light source transmitter and a photoelectric tube receiver, now enables automation techniques to be employed at hazardous industrial or transportation areas. Introduced by Crouse-Hinds Co., Wolf and N. Sts., Syracuse, N. Y., the system automatically activates or turns off lights, starts



or stops motors, totals assembly line output, or controls a number of other electrical or electronic devices.

Light is provided by type EPL 243 Condulet; light detection by type EPA 342 Condulet, a light-sensitive electronic control relay. Whenever the appearance or absence of light is detected through a lens by the receiver's photoelectric tube, a relay opens or closes the electrical circuit.

The light source transmitter housing is cylindrical and features a threaded adjustable focusing ring with converging lens and outer explosion-proof window. Lens focal limits are from infinity to a point within six inches from the lens. Inside the housing a six-volt auto lamp provides the actual light source.

For additional data, circle item 313 *on the handy coupon on page* 100.

Westinghouse announces five-kvar power capacitor

A NEW FIVE-KVAR, single phase, 240-volt power capacitor (Type FPS) for secondary distribution circuits is now available from Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa. This is in addition to the three-kvar power capacitor previously announced. Improved design provides for mounting the power capacitor with terminals either up or down. Each capacitor is supplied with a galvanized steel bracket for direct pole mounting. An

adapter converts the pole bracket into a standard EEI-NEMA cross-arm bracket.

Terminal-mounted fuses that are co-ordinated with the power capacitor ratings are now available. One end of the fuse is provided with a sturdy tapped connector nut that screws directly on the capacitor terminal stud. An insulated lead is attached to the other end.

Aluminum case construction provides permanent protection against atmospheric corrosion. Two insulated leads 48 inches long are supplied with each capacitor to permit easy connection to residential feeders.

The approximate weight of the new five-kvar capacitor is only 25 pounds, and the length from the bottom of the casing to the tip of the terminal is 26 7/16 inches. The approximate weight of the latest three-kvar capacitor is only 16 pounds, and measures 17 5/16 inches overall length. The diameter of both units is 4 5/16 inches.

For additional data, circle item 314 *on the handy coupon on page* 100.

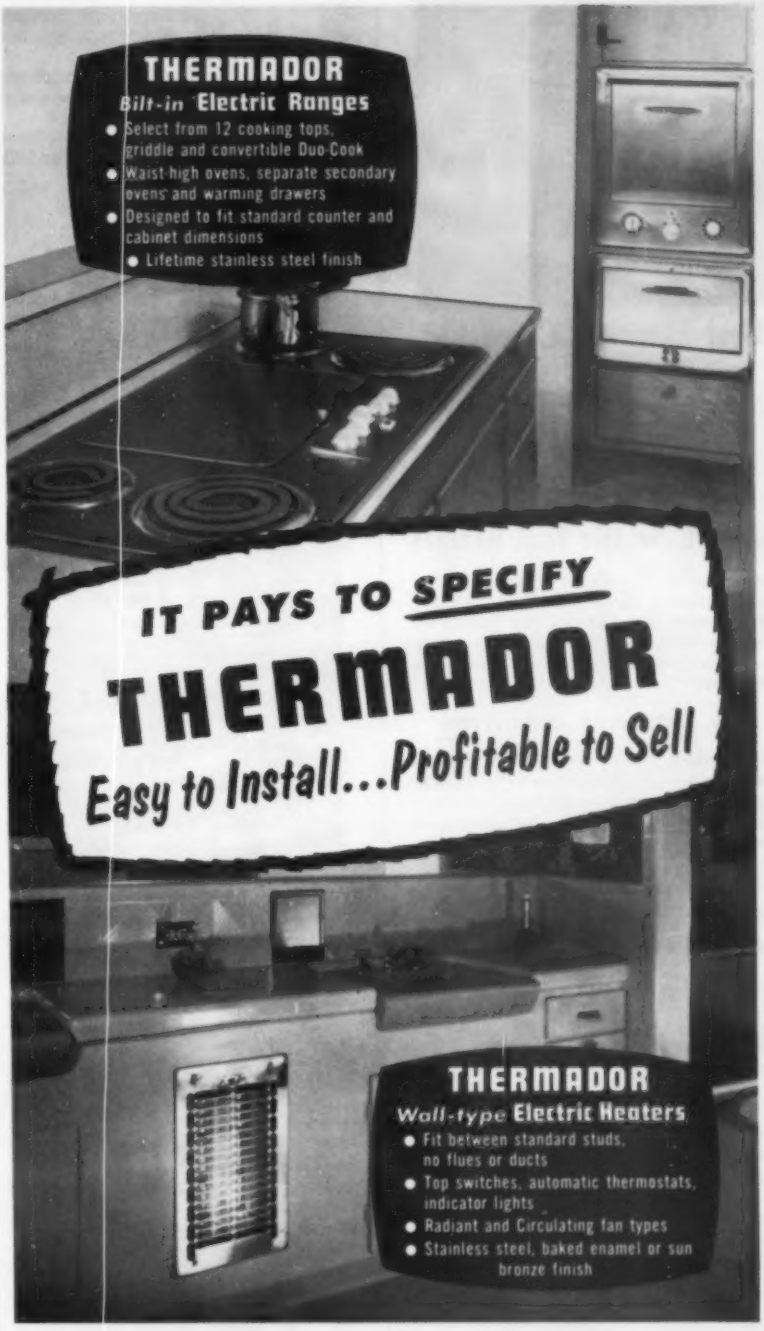
Tal Bender bends both tube and pipe

A PORTABLE HYDRAULIC bending tool for bending both pipe as well as tubing, with one and the same bender, has been brought on the market by Tal Bender, Inc., Milwaukee 2, Wis. The invention, for which a

patent is pending, concerns a hydraulic bending tool for all purposes. The firm has now equipped their hydraulic One Shot pipe benders with a newly developed frame, which enables contractors to bend pipe, rigid conduit, as well as thin-wall conduit (EMT), hard and soft copper, aluminum and steel and any other tubing in 90 and 180 degrees.

This new development greatly increases the versatility of the benders, and according to the manufacturer, reduces considerably the purchase price of the tube bender, as well as the combination tube and pipe benders.

These benders will be of great advantage, especially for use on the job, when pipe and tubing both have to be bent on the spot, thus eliminat-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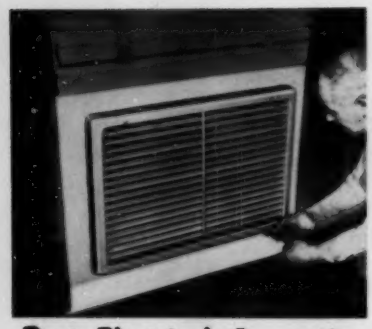

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Radiant Electric Wall Heaters

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NEW, IMPROVED AND BETTER!

ThermoRay's new, exclusive construction imbeds heating elements INSIDE a non-breakable, non-shatterable Raybestos panel for safety; for quick and even heating.

Gives "Local Zone" heat control. Minimum initial inrush spells great ECONOMY.

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Heat gentle and dependable, as soon as needed. A handsome unit, louvre-shielded for extra safety. At home in any room. Rugged construction, enduring finish, pull proof connections. No noise, no smoke, no soot, no fumes.

Many styles, for recessed or surface mounting, 750 and 1250 watts, 115 and 230 volts. Get the detailed descriptions. We welcome inquiries. Approved by Underwriters' Laboratories, Inc. Accepted by New York City Department of Water Supply, Gas and Electricity. Guaranteed for 5 years.

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ing the inconvenience of having different kinds of benders on the job.

The manufacturer advises that for a small charge, they are in a position to convert existing equipment.

For additional data, circle item 315 *on the handy coupon on page* 100.

New ventilating hoods designed for small homes

A NEW, LOWER COST, kitchen ventilating hood, the Stanthony Model S-350, manufactured by Stanthony Corp., 5341 San Fernando Rd., W., Los Angeles 39, Calif., is designed primarily for the builder of smaller homes and multiple housing units

who wants an economical hood with the same high style and eye appeal as deluxe units. Stanthony Model S-350 ventilating hoods are finished in smooth baked enamel and equipped with an eight-inch fan, two 40-watt lamps installed with switches for lights and fan, all assembled and pre-wired to one built-in pull box for easy installation.

Two styles are offered: Aristocrat in white or copper for modern decor, and scalloped edged Provincial in copper enamel for Early American or Ranch style. Sizes are 30, 36, 42 and 48 inches.

For additional data, circle item 316 *on the handy coupon on page* 100.

Two solderless lugs introduced by Ilsco

TWO SOLDERLESS LUGS have been placed on the market by Ilsco Corp., Cincinnati 27, Ohio, which was known for many years as Ilsco Copper Tube and Products, Inc. The new products are VT and LO two-hole collar solderless lugs in six sizes from 14 to 1000MCM wire ranges.

Both lugs are produced from 100 per cent pure electrolytic copper for utmost efficiency. They offer double secure mountings where close spacing must be maintained and where connectors must not turn and come into contact with each other.

VT and LO solderless lugs are advanced in mechanical design, compact, shockproof and cool in operation.

For additional data, circle item 317 *on the handy coupon on page* 100.

Thompson adds wall and wood pole brackets

ANNOUNCEMENT of the availability of "Servisafe" wall and wood pole brackets which are designed to permit safe, efficient ground-level luminaire servicing has been made by the Thompson Electric Co., 1185 Power Ave., Cleveland 14, Ohio.

Incorporating the patented Thompson disconnecting and lowering hanger mechanism, these units completely eliminate climbing and electrical hazards. In addition, unit design provides for almost unlimited range of application and permits greater luminaire mounting heights for improved area illumination.

To lower a luminaire mounted on a "Servisafe" bracket, workman opens tamper-proof lockbox mount-

WHEN

10 SECONDS

CAN MEAN

MONEY

SEE PAGE 31

ACCURATE

ed near wall or pole base and attaches a separate handline to operating cable. He then disconnects the two hanger members with a slow pull and quick release on handline and lowers lighting fixture to ground-level. Because the live contacts remain in fixed-position upper member, lowered luminaire is "dead" and presents no electrical hazards. After fixture is serviced, it is quickly returned to operating position and automatically re-seated by means of handline.

Supplied in complete packages ready for wiring and erecting, "Servisafe" bracket units can be used with standard pendant and flood type luminaires. Mast arms ranging from two to 12 feet, in two-foot increments, are available. Guy rod brace assemblies are supplied with units having six-foot or longer mast arms, and may be ordered separately for shorter arm units if desired.

For additional data, circle item 318 *on the handy coupon on page* 100.

Lift-A-Loft unit ideal for overhead maintenance

DESIGNED FOR FAST, efficient handling of overhead maintenance jobs, the Model 19-6 "Lift-A-Loft," recently announced by Mitchell Maintenance Co., Inc., P. O. Box 1225, Muncie, Ind., has a 19½ foot platform height, permitting one man to reach points as high as 25 feet over the floor and up to 16 feet in front of the unit.

The operator rides this battery-powered platform lift truck to the job location, then using push buttons, quickly raises the platform to the lights, wiring, or other overhead maintenance problems. Up to 500 pound loads are safely carried on the platform, permitting replacement parts, cleaning materials and other equipment to be carried aloft with the operator.

The Model 19-6 Lift-A-Loft has a four-section, telescopic lift with a non-tilt, riding, sliding platform. Overall height in traveling position is only 7¼ feet; overall width 35 inches. A day's supply of washing water is carried in the ballast tank and can be pumped to washing tanks on the platform to make the unit completely self-sufficient.

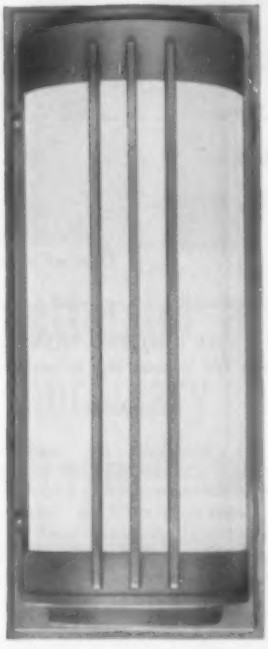
For additional data, circle item 319 *on the handy coupon on page* 100.

Breaker safety switch designed for compactness

A 100-AMPERE circuit breaker safety switch, in a space-saving enclosure which occupies about half of the space required by comparably rated fused switches, has been introduced by Heinemann Electric Co., 431 Plum St., Trenton 2, N. J. The

"Night and Day . . . These are the Ones!"

POST LANTERN
NO. 490



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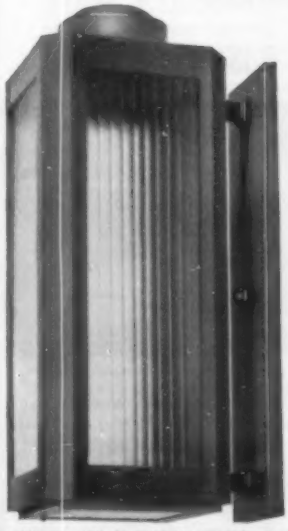
NO. 1833

Beautiful, distinctive, profitable

EXTERIOR LIGHTING BY NOVELTY



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NO. 1784

There's extra business for you with these finest quality Bronze Lanterns for every type or style of building. Engineer designed, easy to install and fully guaranteed for durability and long life. Write today for catalogs showing designs of lighting equipment for the church, school, hospital, institution and residence.

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B305	B306	B307	B308
B309	310	311	312
313	314	315	316
317	318	319	320
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unit is designed for service on 120/240 volts ac, in two or three wire installations.

It incorporates two single-pole Heinemann hydraulic-magnetic circuit breakers with handle extensions attached to form one double-pole unit, allowing both circuit breakers to be switched on or off together. The unit employs ruggedly constructed general purpose type circuit breakers in standard ratings of 70 or 100 amperes.

The new circuit breaker safety switch is economical in terms of first costs, maintenance, and production time it can save. While it compares favorably in price with fused switches and other circuit breaker switches, it eliminates the added expense of replacing fuses or elements. Service is restored immediately, with the flip of the switch.

Heinemann circuit breakers in the unit have inverse time delay to prevent nuisance tripping. Minimum and instantaneous trip points are unaffected by heat or cold, so that safe use of full capacity of the wiring is assured.

The enclosure is attractively finished in durable grey baked enamel.

For additional data, circle item 320 on the handy coupon above.

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National adds industrial type Nepcoduct raceway

A NEW INDUSTRIAL type of Nepcoduct underfloor electrical raceway, with more than three times the capacity of standard underfloor duct, has been announced by the manufacturer, National Electric Products Corp., Gateway Center, Pittsburgh, Pa.

A rugged, 14-gauge cold rolled steel raceway with a four-inch by four-inch cross section, Industrial Nepcoduct is designed for heavy-duty wiring in industrial plants where overhead wiring would interfere with normal operations.

The new Nepcoduct's greater capacity allows a flexibility in plant layout which is not possible with the lesser capacity of standard underfloor raceways. Electrical installa-

tions which utilize such an extensive distribution system permit an almost infinite variety of machinery emplacements, since all areas are adequately served by electrical outlets.

Industrial Nepcoduct is galvanized by the sherardizing process and is further protected with an acid-resistant clear enamel on interior and exterior surfaces.

The new product is furnished in standard 10-foot lengths and provides two-inch pipe size, threaded outlets on 24-inch centers permitting the direct insertion of conduit for standpipe service fittings. Complete with junction boxes and a full complement of fittings, Industrial Nepcoduct is a fully grounded, industrial underfloor wiring system, and is UL listed.

For additional data, circle item 321 *on the handy coupon on page* 100.

SEWA Annual Meeting

(*Continued from page* 26)

were at that time big enough, or wealthy enough, to establish as many stocks or redistribution centers as were required. Thus the wholesaler's discount came into being to encourage him to buy in large quantities and set up the desired warehouse stocks. He was, in effect, being paid by the manufacturer to provide availability for his goods.

Evaluation of jobbers

"In the early days when national distribution was first becoming a part of our economy, the wholesaler was a jobber. He bought job lots on a negotiated basis from whomsoever might offer something for sale that he thought he might in turn resell. He did not become a Distributor until he formed an alliance with a particular manufacturer to "represent" him and attempt to push or sell that line or brand over and above all others. In the pure sense, that is what we mean today when we use the term 'Distributor.'

"I think it most important that we remember that primarily the wholesaler's discount is based upon a premise that he purchases in large quantities. Present day mass production techniques have created new reasons why it is essential that the manufacturer receive orders for large quantities so as to maintain a smooth flow of merchandise off his assembly lines and out the shipping door. Yet, in face of this necessity, more and more wholesalers are buying from hand to mouth and placing frequent small orders. To the extent that they do this, they are

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Please send me the Amprobe service bulletins checked below:

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falling down on one of the jobs they are supposed to do for the manufacturers they represent.

"During recent years we have witnessed a trend that if allowed to continue will result in the wholesale distributor of apparatus and supplies degenerating into a job lot dealer and broker. There are some who say it has already happened. It is true that we already have some electrical wholesalers who purchase from any manufacturer that offers them the best price at the moment. They have little thought of 'representing' a specific manufacturer or of handling a certain line. They operate on the basis of turning over a volume of goods or merchandise. They care little that it is electrical merchandise. It might just as well be ash trays.

"This trend is only partially due to the conduct of the wholesale distributors. Manufacturers are equally responsible. Also the manufacturers' 'agents.' It takes two to make a transaction so if there are wholesalers who buy in that manner then there must also be manufacturers who sell the same way."

Discussions of lighting

The last two talks on the program both related to lighting. Laurance C. Messick, manager of the National Lighting Bureau, New York, outlined the certified lighting program which is being sponsored by the Bureau, and told of its profit possibilities for local utilities, distributors and electrical contractors. He directed special attention to the sales training plan embraced in the program.

"This sales training program will be conducted by the local Lighting Bureau with the materials and very complete plans made available to them by the National Lighting Bureau," Mr. Messick said.

"This sales training program is practical; it has been pre-tested; it is designed strictly to develop more relighting sales through the contractor. It talks the contractor's language—it's not full of ten-syllable words and is a practical useful tool.

"It includes completely planned meeting aids and outlines, so that local instructors selected by the local Lighting Bureau can stage really effective sales meetings. There are seven of these sales sessions.

"The program will have a sound slide-film emphasizing practical selling methods. There are also a complete set of take-home booklets which the contractor will receive after each one of the sales meetings."

New concept seen

The other talk on lighting was presented by Joe B. Browder, manager, commercial sales engineering division, Georgia Power Co., Atlanta. He said that the greatest potential dollar volume in the field of lighting is in the homes of America. And he urged that the industry take steps to reverse the trend—and bring about an entirely new concept of residential lighting—one which will break the shackles of custom, yet satisfy the "atmosphere-conscious" interior decorators.

"The tool with which to accomplish this seemingly impossible task," Mr. Browder said, "is the luminous plastic ceiling—a giant in swaddling clothes, if ever one existed. I speak of the type made from thin corrugated solid vinyl sheets, which should not be confused with the familiar plastic or metal egg-crate louvered ceilings.

"I would like to talk a bit on the advantages and performance

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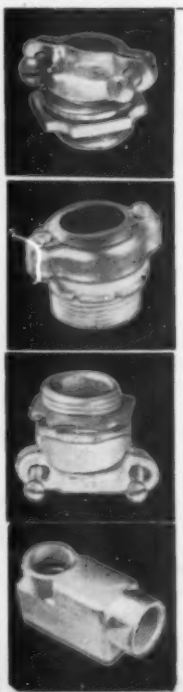

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of the luminous ceiling and then attempt to develop a place for it in the residential lighting field. The experience upon which I will draw, was gained in commercial and industrial applications, but much of it will apply in residential use.

Luminous ceilings praised

"This method of providing general illumination, is in my opinion, without peer. I worked in an office lighted in this manner for over a year and I have talked with many people who have worked under luminous ceilings, and all of them say that it is without a doubt the most comfortable, the least conspicuous, and the finest lighting yet developed. Very high intensities are possible without excessive glare, and even without consciousness of there being a lot of light present. When the entire ceiling becomes the light source, the distribution is exceptionally good and provides excellent seeability anywhere in the room.

"The plenum or cavity, above the plastic, becomes useful for air distribution as well as for light distribution. This is very important, since it means large savings in duct costs where air conditioning and hot air heating systems are used.

"Tests at Brown University, the Case Institute of Technology in Cleveland, and at M.I.T., have shown that certain types of luminous ceilings are capable of giving a more uniform distribution of air than conventional grilles and air diffusers. One would assume that dirt would be a problem if the plenum is used for air distribution, but this is not true. The Case Institute tests showed a light loss of only 3% in a period of 91 days due to dust collecting on the plastic. It retained more than 90% of original output at the end of a full year without cleaning. The conclusion was that the lamp deterioration was a greater factor than the loss of transmission of the plastic due to dirt. This of course, would hold true only if the plenum above is free of cracks, air leaks, and other sources of dirt. A maintenance factor of 87% appears very real. I know of no other lighting system that deteriorates less than this.

Underwriters approve

"The corrugated vinyl ceiling is approved by the Underwriters for use beneath sprinkler heads. The plastic sags and falls out at 145° F. whereas sprinkler heads are usually calibrated to pop-off at 165° F.

"Vinyl will not support combustion. When corrugated, it is one of the most amazing diffusers of light I have ever seen. As proof of this last statement, let me tell you of a very unique and interesting job in the Georgia Power Company general office building here in Atlanta.

"We experimentally lighted an office with a color corrected mercury lamp mounted on the ceiling five feet above a suspended vinyl ceiling. We used a 1000 watt, 50,000 lumen CH12 mercury lamp. Although there is only one of these lamps located five feet above an expanse of vinyl measuring 12 feet by 15 feet (180 sq. feet), and

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PLYMOUTH RUBBER COMPANY, INC.
Manufacturers of SLIPKNOT — The World's Largest Selling Friction Tape
Canton, Mass.

although this 50,000 lumen lamp is extremely brilliant, the plastic is uniformly lighted to the extreme corners of the room. This particular office has 60 footcandles of light furnished by this one lamp.

"The 70 pound ballast was located in the basement and the existing circuit wiring from the panel board to the outlet was used for the ballast secondary. Remote location of the ballast eliminated heat, noise, and danger of falling. A simple mogul socket was placed on the existing ceiling outlet. The lamp can be replaced with a street lighting lamp stick without the use of a ladder, although the lamp is 18 feet from the floor. The plenum was given a coat of flat white paint which made unnecessary the use of a reflector for the lamp. This job makes use of the plenum for air distribution as mentioned above."

Motor failures

(*Continued from page* 27)

relay. This relay supplies 12 volts on one phase of motor leads.

Starting the coolant pump, on the other hand, disconnects the low-voltage relay immediately.

By linking the low-voltage load with pump operation, Turner avoided subjecting his drying system to many stops and starts made by the machine itself. The spar mill may be started 50 times a day. But, normally, the pump—which operates independently of the spar mill—is turned off only when the mill is shut down at the end of a shift. This formerly was the period of condensation, the time when a drying system was needed.

Allowance for safety

Two safety features protect the transformers supplying low voltage. One safeguard is the fact that the spar mill can't be turned on until the pump is operating. Since turning on the pump automatically disconnects the low-voltage feed, there is no danger of the spar mill's 440-volt feed reaching the 12-volt transformers.

As a double precaution, the feed from the 12-volt transformers is fused.

The maintenance crew already has installed the low-voltage drier on two spar mills. Driers will go on the remaining six mills as soon as production schedules permit. Cost of the transformers, wiring and fuses required will average about $50 per machine.

Line over marshland

(*Continued from page* 44)

the picture, we were talking about 35-foot poles with an average weight of 500 pounds each, not to mention the large cross-arms, anchors and other fittings. It could be done manually but would be a long and expensive process. Try lugging a 62-pound cross-arm a mile through waist-deep mud and wading back for another one! So the tide tables and weather experts were consulted. September and October usually have a series of extremely high tides sometimes accompanied by a stout northeast wind which makes them even higher, a real marsh hen tide. But we had to consider the temperature of the weather, too, since the linemen would probably stay wet most of the time. The tide tables called for an 8.9 foot tide on September 13 going up to 9.0 feet on September 15, so our schedule was set up to start on September 13.

Capitalizing on tides

This job was begun under adverse weather conditions that remained until completion. The previously mentioned "spring tides" are usually accompanied by rain, too, and they were this time. It rained some every day the job was in progress.

The first job was spotting the poles and material at positions marked by stakes. At high tide the marsh was covered with water, except for the top of the grass, for about three hours. Three flat-bottomed boats, equipped with outboard motors, could pull a chain of three poles when the water was deep enough to float the poles. Several stops had to be made between the mainland and pole locations to clean the marsh grass from the propellers.

Care was taken not to get too far from the main river as we didn't want any boats stranded

10 Seconds Can Make Or Break The Biggest Job

SEE PAGE 31

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Factory rep. wants lines to represent in Okla. Now opening agency in Okla. City. Past record—10 yrs. in sales with leading distributor. Age—35 yrs., can furnish exc. record and character ref. Box 709, Electrical South, 806 Peachtree St., N.E., Atlanta, Ga.

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when the tide began ebbing. In this manner, poles and material were positioned while the tide was high, and pole-setting was accomplished after the water had receded.

Pole-setting, too, was a tricky problem very well met and conquered by the line foreman and his crew. A footing for all poles had to be dynamited since the soft mud prevented holes being dug. A shallow hole was dug, then a small hole was punched down using a 2-inch pipe as a wall. A stick of dynamite was inserted into this small hole to a depth of about seven feet and the pipe removed. The pole to be set was raised, by main strength and awkwardness, to a vertical position and the dynamite detonated. This explosion opened up the mud and allowed the pole to settle to a depth of seven feet. A cross-pole or mud-sill prevented further sinking.

After the poles were set, the two copper conductors were pulled across the marsh and river at high tide by boat. They were laid up on the poles and pulled to proper sag by the linemen at low tide.

All in all, this was an unusual job performed by Georgia Power Company employees working in co-operation with one another, and with Mother Nature, to furnish the conveniences of electric service to the customer.

Garden lighting

(*Continued from page* 23)

fore garden and luncheon clubs on the subject.

Miss Patterson reports that she found a universal dissatisfaction with out-moded floodlighting and an equally general demand for information on how to proceed with creation of modernistic lighting.

Then, in the month of May, the power company assigned her a truck with helpers and equipment and six Dallas gardens were lighted in succession, largely for the purpose of making available, colored photographs for future promotion.

Green lights used

This lighting was done only on a temporary basis, however, using extension cords with the proper lamps for either formal or informal lighting—whichever the scene called for. She made considerable use, she reported, of the torpedo fixture, the PAR lamp on a ground spike and green color lenses which accentuated the greens in foliage, producing a more natural effect.

She reported, too, that several of the householders where temporary lighting was installed declared an intention to install permanent lighting.

In Dallas, also, one electrical wholesaler expects to have ready for this season a complete display of electrical equipment and fixtures necessary for garden or lawn lighting, according to the modern concept, and in a realistic garden atmosphere.

Contractor's entree

All things considered, therefore, this field should be fully ripe for the enterprising contractor in 1955.

Perhaps each and every garden or lawn lighting job that becomes available to the contractor may not appear to be attractive, judged by the amount of work involved.

But there is also involved the opportunity to gain entrance to the household which, the chances are, needs modern adaptations in wir-

for the LONG PULL use

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ing, possibly an entire re-wiring job that can be sold.

And unless the contractor has definite information to the contrary, the head of that household could be the source of a valuable lead on a substantial commercial or industrial installation.

So the contractor may not want to be too quick to turn his back on the opportunities of the garden and lawn lighting field.

New A-W material

(*Continued from page* 21)

The National Adequate Wiring Bureau's program for certifying the wiring in new residential construction is represented by a kit containing new certification materials, direct mail and handout pieces for builders, consumer folders and booklets.

As an accompanying action — the National Electrical Contractors Association will mail the Residential Wiring Handbook, a standards publication of the electrical industry, to architects and to members of the National Association of Home Builders.

For the first time, sales material especially designed for appliance dealers to help them sell adequate wiring along with the appliance, has been made available by the National Bureau. One striking new two-color folder bluntly tells the dealer, "You're Being Robbed," by inadequate wiring in the customer's home, and documents the dealer's loss in potential sales. Another is a hand-out piece showing the consumer how home wiring affects appliance operation.

On the wholesalers' level, the impetus to adequate wiring action will come from the National Association of Electrical Distributors. Arthur W. Hooper, director of the association, announces the appointment of a special adequate wiring committee to deal with problems of distributing literature, planning programs and contacting electrical contractors and dealers.

Promotion of program

During 1955 the National Adequate Wiring Bureau will continue an advertising schedule in selected consumer publications, according to its plan committee chairman. It will also undertake an expanded editorial information program which will include a series of news features for metropolitan dailies, monthly mat releases to the smaller papers, and scripts for women radio editors.

In addition, an educational kit of material revised to include the new 1955 wiring standards is scheduled for distribution to home economics and vocational teachers.

Licensing bureaus

The number of local adequate wiring bureaus licensed to certify wiring in new homes is now 86, the Bureau reports. New bureau formation has been accelerated during the past year by an unprecedented recognition on local levels of the effect of "lights only" wiring on the market for electrical goods and services. To meet the local demand for guidance, a new basic planning guide has been made part of the 1955 sales action kit. Entitled "Organizing and Operating an Adequate Wiring Program," the 24-page book in color describes personnel requirements for bureau operation, how operating costs are allocated, and program launching procedures.

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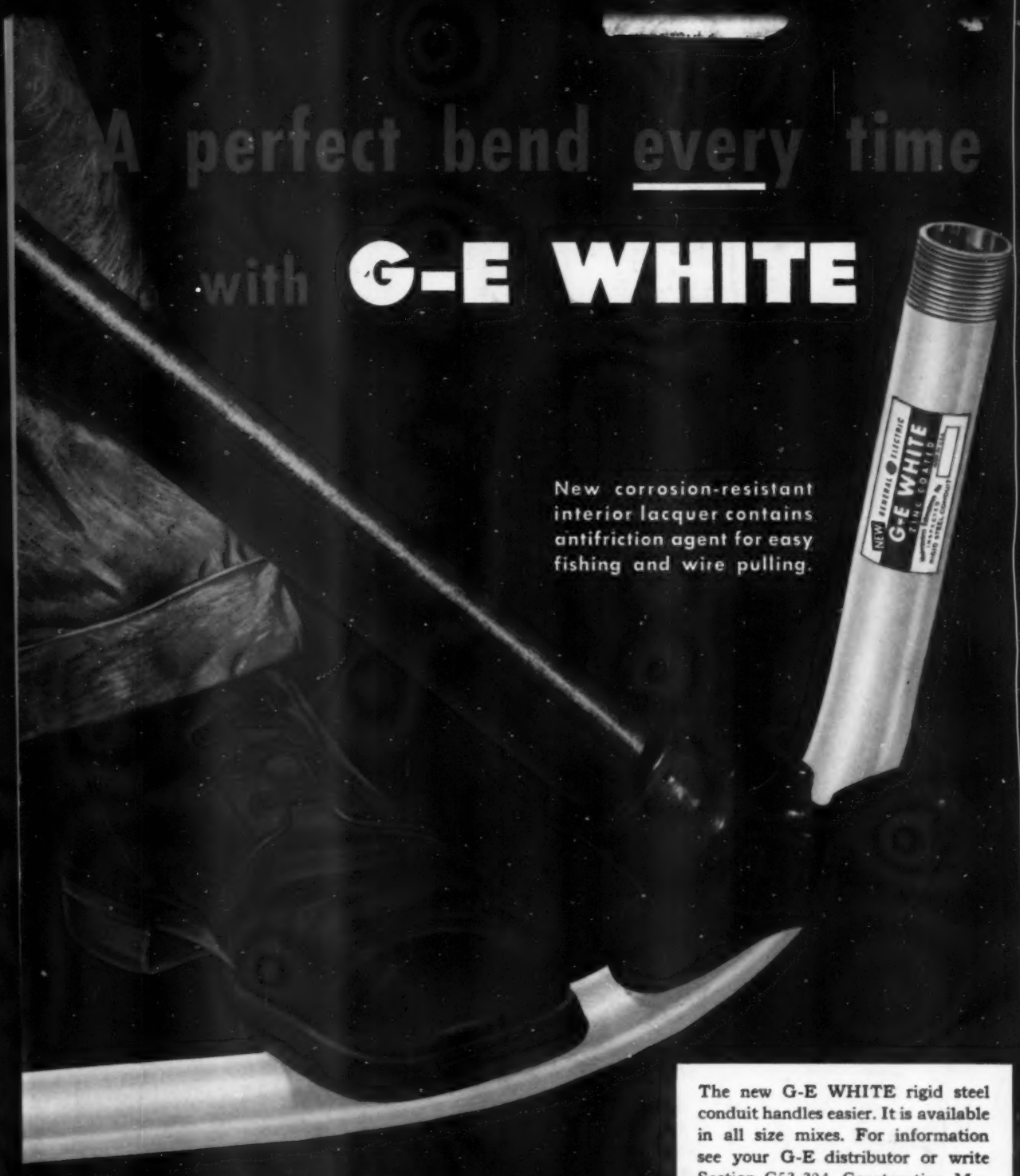
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